

In This Issue—At the New York Show

MOTOR AGE

Vol. XLV
Number 2

PUBLISHED WEEKLY AT THE MALLERS BUILDING
CHICAGO, JANUARY 10, 1924

Thirty-five Cents a Copy
Three Dollars a Year

If I were a dealer making uncertain progress trying to meet the terrific competition in the low priced field—I'd stop the next twenty five Jordan owners I met on the road—ask them a few questions and then—decide—

Edward S. Jordan

President
Jordan Motor Car Company
Cleveland, Ohio

DAWN OF A NEW ERA

BLACK & DECKER ANNOUNCE NEW PRICES FOR 1924

ANOTHER TRIBUTE TO AMERICAN QUANTITY PRODUCTION METHODS

Do you realize the significance of what is happening in the Electric Tool Industry?

The same principle is being applied which has enabled the United States to produce 82% of all the motor vehicles in use throughout the world---QUANTITY PRODUCTION.

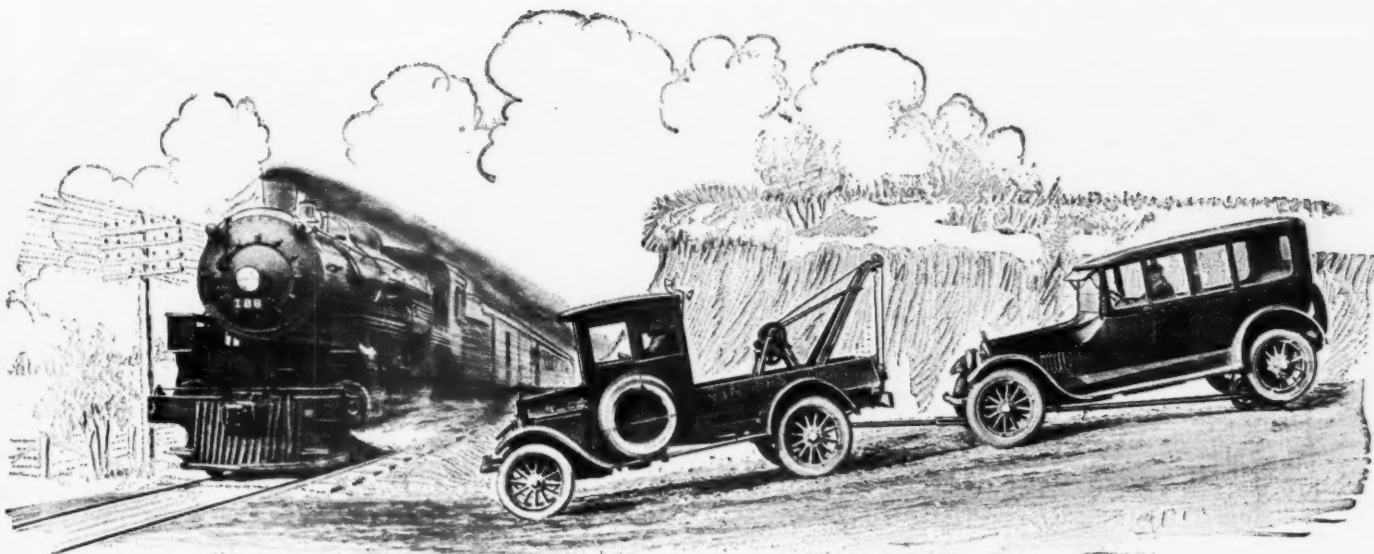
We have applied the great American principle of Quantity Production in the Electric Tool Industry, with the result that you can secure electric tools of the highest obtainable quality---Genuine Black & Decker Tools---at almost the same price as you would have to pay for inferior tools.

We will gladly send you miniature catalogue on request."

THE BLACK & DECKER MFG. CO.
TOWSON, MD.



"The Best-Equipped Shop
Gets the Business"



No danger on sudden stops



with the **WEAVER** Towing Pole



This Clamp is designed to attach rigidly to any front axle.

SUDDEN STOPS---at dangerous crossings, on hills, in crowded traffic---are often unavoidable in towing disabled cars. When the brakes of the rear car are out of commission or the driver of the rear car fails to apply them in time, smash-ups are bound to occur---unless a rigid connection like the Weaver Towing Pole is used.

The New Weaver Model "D" Towing Pole is unique in providing a connection which is absolutely rigid to prevent jamming and yet amply flexible to prevent bending the pole when turning corners, towing over rough roads, etc. These essential properties are due to the construction of the jaw clamps at the end of the Pole, which fasten securely to any front or rear axle without danger of slipping, and to the two hooks which form universal joints, allowing play in any direction, but which cannot become unhooked in towing.

Pulling and jamming shocks caused by sudden starting or stopping, towing over rough roads, etc. are absorbed by the heavy coil spring, an indispensable feature in a rigid pole of this type.

If you want to make big money on your towing work, by handling it more quickly and economically, write for detailed information on our Towing Pole, Auto Crane and Auto Ambulance.



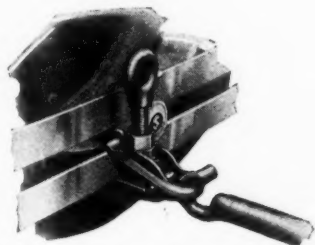
This clamp will rigidly grip any rear axle.



Splash aprons do not interfere.



Note how readily it can be applied to Ford rear axle.



Can be attached to either rear or front bumper.

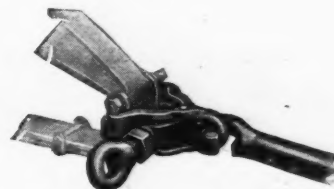
The best equipped shop



gets the business

WEAVER MFG. CO.
Springfield, Illinois, U. S. A.

WEAVER CANADIAN CO., LTD., Chatham, Ontario



Clamp can easily be attached to spring or spring shackle.



Patented
March 20, 1910
May 2, 1922

OIL-REGULATING TYPE, \$1.00 EACH

One to a piston

Up to and including 5 in. diameter
COMPRESSION TYPE, 25c and up

Indiana Piston Ring Company, Hagerstown, Indiana

Harkrader & Harkrader: Western Sales Agents
1603 S. Michigan Ave., Chicago

Marketed through recognized automotive jobbers, only.

A BIG SUCCESS

IN two years PERFECT CIRCLE Oil-Regulating Piston Rings have swept to a tremendous success.

Their adoption as standard equipment by such leading manufacturers as Packard, Hupmobile, Willys-Knight, Marmon, Stutz and many others, is proof of the magnitude of their success.

For many jobbers and dealers PERFECT CIRCLES are building a volume of business heretofore unknown on any piston ring. If you do not already know ALL about the new PERFECT CIRCLE Oil-Regulating principle, it will pay you to investigate. Write today.

PERFECT CIRCLE

Oil-Regulating Piston Rings

MOTOR AGE

Reg. U. S. Pat. Off.
Published Every Thursday by

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Single Copies 35 cents

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Entered as Second Class Matter Sept. 19, 1899, at the Post Office
at Chicago, Ill., under Act of March 6, 1879.



Cash in on Columbia Advertising

LARGE advertising space in over sixty leading magazines is helping you sell Columbia Ignitors and Columbia Hot Shots. This advertising reaches millions of readers, including practically all who buy batteries to-day, or will become battery users in the future.

Take advantage of the strong impression that Columbia advertising is making. Display Columbia Ignitors and Columbia Hot Shots where people entering your store will be reminded that they need new batteries. Put up Columbia display signs showing that yours is the store where Columbians are sold.

And when customers ask for a dry cell—sell them Columbians. They'll be well pleased and remember you next time they buy, for Columbians are great friend winners wherever they are used.

NATIONAL CARBON COMPANY, INC.

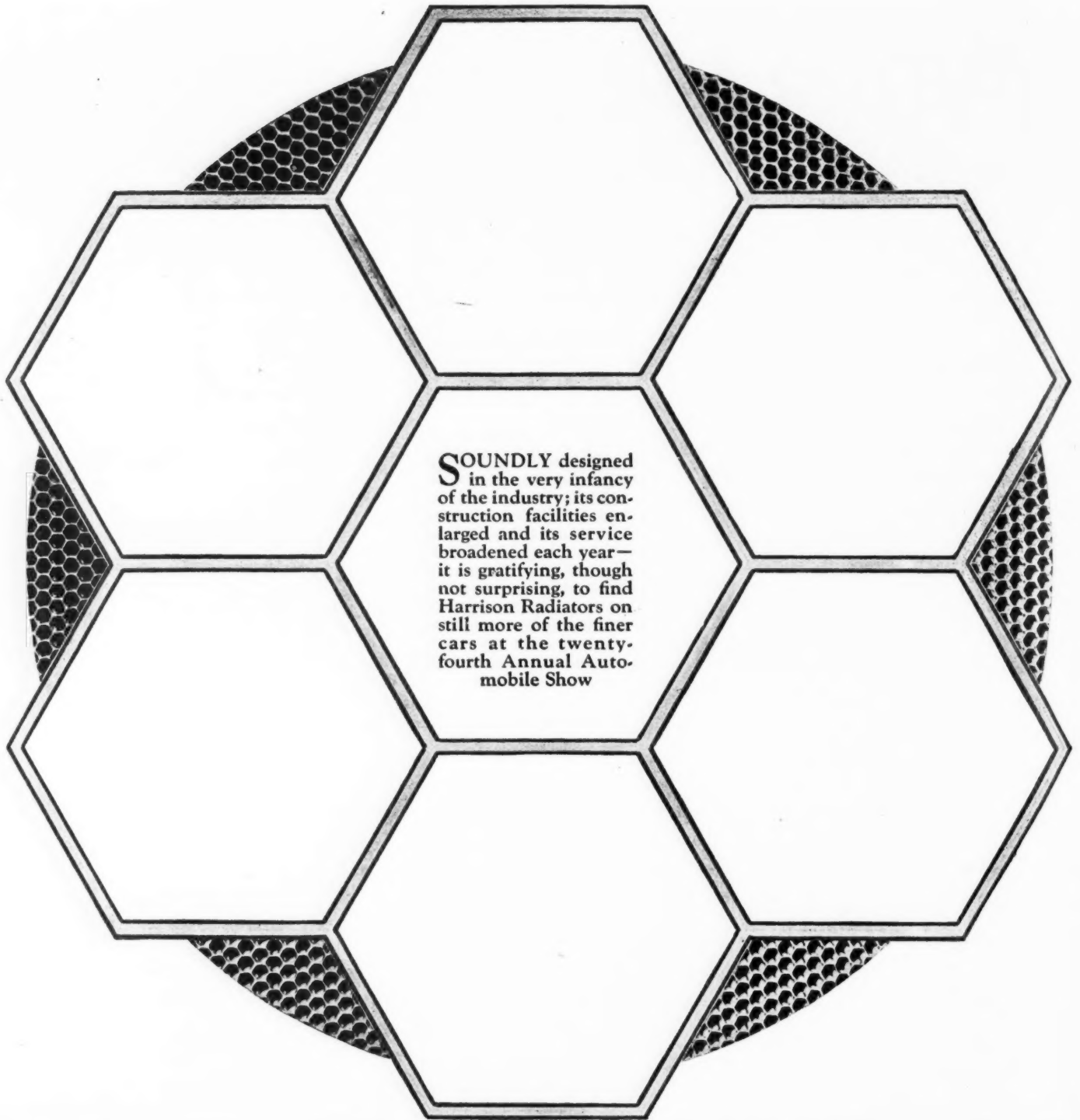
New York

San Francisco

Canadian National Carbon Co., Limited
Factory and Offices: Toronto, Ontario

Columbia Dry Batteries

—they last longer



SOUNDLY designed in the very infancy of the industry; its construction facilities enlarged and its service broadened each year—it is gratifying, though not surprising, to find Harrison Radiators on still more of the finer cars at the twenty-fourth Annual Automobile Show

HARRISON Radiators

HARRISON RADIATOR CORPORATION

Lockport, New York

A Foundation Upon Which to Build Success

Some one has said that the dealer who cannot make a success selling Studebakers has no future in the automobile business.

We would put it another way—

We sincerely believe that any business man who exerts proper effort and follows ordinary business principles can make a greater success with the Studebaker franchise than with any other line.

This belief is founded on the fact that Studebaker dealers are universally successful.

The stability of the manufacturer is a bigger factor today in the sale of motor cars than ever before. The actual net assets employed in the Studebaker business exceed \$90,000,000 against which there is no indebtedness.

With \$50,000,000 invested in plants and facilities and an organization of able, experienced men, Studebaker is in a position to manufacture economically and give the greatest intrinsic value possible for a given price.

The Studebaker line—three models in thirteen body types—the only *complete* line, enables the dealer to get his share of *all* the business in his territory.

These are factors that the dealer who is looking to the future should consider.

A postal card will bring a man to you who will tell you the details of this wonderful proposition—without obligation, of course. Tomorrow may be one day too late.

1924 MODELS AND PRICES—*f. o. b. factory*

LIGHT-SIX 5-Pass., 112" W. B., 40 H. P.	SPECIAL-SIX 5-Pass., 119" W. B., 50 H. P.	BIG-SIX 7-Pass., 126" W. B., 60 H. P.
Touring.....\$995	Touring.....\$1350	Touring.....\$1750
Roadster (3-Pass.).....975	Roadster (2-Pass.).....1325	Speedster (5-Pass.).....1835
Coupe-Roadster (2-Pass.) 1195	Coupe (5-Pass.).....1895	Coupe (5-Pass.).....2495
Coupe (5-Pass.).....1395	Sedan.....1985	Sedan.....2685
Sedan.....1485		

THE STUDEBAKER CORPORATION OF AMERICA
South Bend, Indiana

Studebaker

T H I S I S A S T U D E B A K E R Y E A R



Nash Leads the World in Motor Car Value

Additional 3% Discount from List on All Fours Awarded Nash Dealers

The above action taken by Nash, effective from January 1, 1924, until further notice, is nothing short of revolutionary in that it is also *retroactive*, covering all current Fours in dealers' stocks shipped during the period from July 1, 1923, to December 31, 1923, and in transit.

The 3% is an addition to the regular billing discount and also to the contingent quantity discounts earned by Nash dealers.

This announcement by Nash is directly in line with the fundamental Nash policy of seeing that the dealer is well cared for and that the Nash franchise is made more and more valuable as time goes on.

It should provide important food for thought to every dealer who is not content with the profit-possibilities of the line he now handles.

Just bear this in mind—*1924 business will be as good as you make it*, if you have the Nash line. Wire about territory at once.

NASH

THE NASH MOTORS COMPANY
KENOSHA, WISCONSIN

Nash Leads the World in Motor Car Value



(2566)



MARMON—A better product for less money has never yet failed to find a ready response from the American buying public—or from motor car dealers. The Marmon with its sixteen new and distinct refinements now sells for \$2785

Price Range, \$2785 to \$4285

All prices f. o. b. factory. Government tax additional

NORDYKE & MARMON COMPANY • Established 1851 • INDIANAPOLIS





20 Years of Progress

THAT the REO Sales Franchise is a big profit-producing asset is because the REO line is backed by twenty years of consistent and continuous manufacturing experience, and because it consists of products to fit every phase of motor transportation.

1924

Passenger Cars
(Five Models)

Speed Wagon
(12 standard bodies)

New Reo Taxicab
(4 and 6 cylinder)

Speed Wagon Parcel Delivery

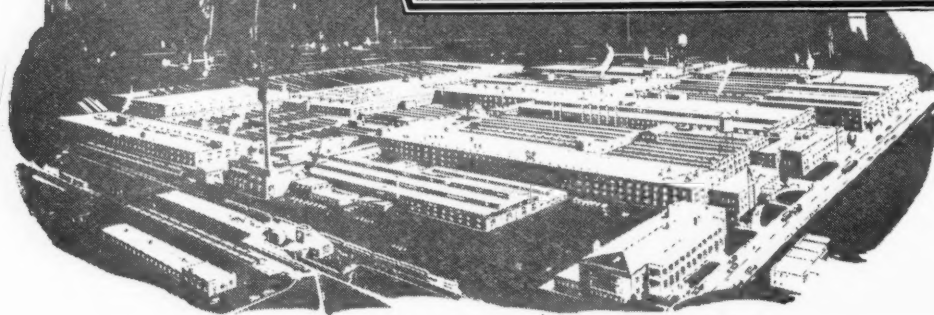
(For exacting merchants)

Reo Busses

(On the famous Speed Wagon Chassis)

Territory is limited, but prompt applications will be given immediate consideration.

Reo Motor Car Company
Lansing, Michigan



MOTOR AGE



A view of the new armory, from the balcony, as it appeared at the opening of the Twenty-Fourth Annual New York Automobile Show

New York Show Fulfills Promise for Beauty, Size and Attendance

*1924 Exhibit Season Opens Encouragingly Despite Changed Location.
Numerous New Models Hold Interest of Visitors*

By CLYDE JENNINGS

ALL that was promised was delivered Saturday when the Twenty-Fourth annual New York Automobile Show opened in the 268th Field Artillery Armory Saturday afternoon. It was the biggest and handsomest automobile show this country has ever seen and any other adjectives that you may like to use in descriptions can be applied with safety.

And, furthermore, the visitors were there in great numbers. While it is not the custom to give out

attendance figures, there is every assurance that the attendance exceeded that of last year on the opening day.

There were difficulties in the way of getting a crowd to the big building nine miles from the heart of Manhattan. First off, the subway and elevated both staged wrecks that stopped traffic for an hour or more that held up the crowd that always makes a rush at the opening of the doors.

Only a New Yorker who knows how seldom these lines interrupt traffic will realize what a curious coincidence it was for this to happen. So it came about that the great show opened with only a few local people straggling through the doors. But an hour later there came the rush released from behind the traffic jam.

At about the same time, the thermometers began a downward rush and by dinner time there was a gale blowing that rivals the best products of the windy west and from a pleasant winter temperature, a downward plunge was taken to near zero. Those who journeyed to the Bronx in the evening were really a hardy set of people, and yet they were there in thousands.

As to the show itself, it is quite difficult to visualize just what it looks like. The eye is not accustomed to buildings 300 by 600 feet. A description is meager. You visualize an armory of course as a bare brick building with many iron girders. And at this size, this great building would be expected to look "like all of out doors."

That description does not fit in this case. Every part of the roof was hidden behind a covering of cloth and new sidewalls of building board had been set up. The cloth ceiling carried an artistic layout that is as bold as the building is large, done in green and ivory. A myriad of lamps well inclosed give all that can be desired in the way of light without a glare. The decorations of the sidewalls was done in warmer tints and the place markers for the exhibits were obelisks, decorated with statuary. Some of these obelisks stood 25 feet high. They are in several sizes to break the monotony.

There is much talk about the decorative scheme among those who gather in the balcony but there is practically nothing of criticism or suggestion.

When it comes to seeing the displays it is quite a novelty to have practically the entire exhibit on one floor. By necessity a dozen of the late applicants for accessory space are on one of the balcony and the desire of the visitors to get up and look down on the marvelous exhibit is bringing these exhibitors a large number of visitors.

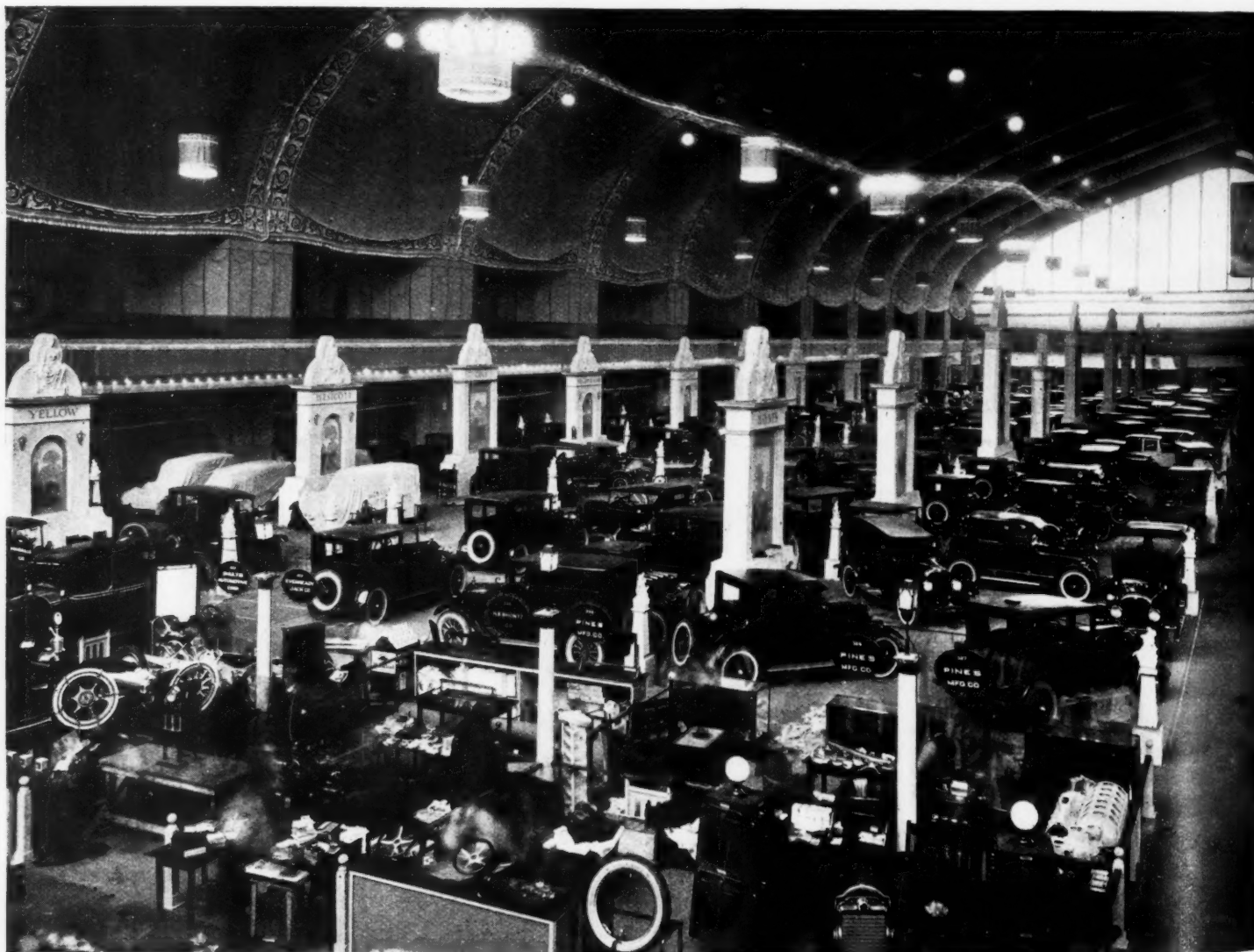
In the car exhibit section, the spaces are larger and the aisles wider and an increased number of visitors can move with greater ease. At the high attendance period on Saturday night, one veteran show salesman estimated that there were twice the number of persons in his exhibit space than at previous shows, and yet they were not jammed.

There are 75 exhibitors of cars and all are gasoline vehicles. This is the twenty-fourth annual show and the first that is 100 per cent gasoline vehicles. It was quite notable that the Stanley steamer which, with its lecturer, has always held crowds at previous shows is not present. The electric vehicles also are absent.

Stripped Chassis Hold Attention

The stripped chassis, of course, hold the visitors the longest. There are 36 of these chassis in the passenger car section and three in the taxi-cab spaces. Probably half of these are in motion and these appear to have a strong fascination for the technical as well as those who merely know that a motor car is something to ride in.

There is a total of 347 complete vehicles on the show floor and very few of them are unavailable to the visitor. Indeed, while the color scheme of the cars is more varied than usual, there is an almost complete lack of any color scheme of ribbons that barred visitors from the inside of the cars. It



Looking straight down the central aisle, gives some idea of the spacious hall

was interesting to note that it is not only the women who were enjoying the back seats of the cars, but that some men are making the rounds and accepting every invitation that could be gained to "see how comfortable it rides." One man with whiskers was observed in five cars the same afternoon. Perhaps the men not shielded by whiskers were more modest and contented themselves with the time honored test of shaking the cars. At least that is the way it appears to the observer.

All Exhibits Receive Attention

One thing that is notable in this one-floor show is a more equitable distribution of the crowd. In previous shows it has always been notable that the best known and more freakish cars received a much greater share of attention. But in this show, the crowd appears to be quite impartial in its attention, excepting of course the stripped chassis. That is the secret of getting visitors to loiter about the booth.

This show is not as full of interest to the man who has kept pace with the developments of the fall as some previous shows. There is lacking anything of spectacular mechanical or engineering interest. Four wheel brakes, balloon tires and automatic gear shifts are interesting, of course, but the chief interest in these items is what cars have them. The car that has four-wheel brakes is noted, a glance assures that there is nothing radically new in the installation, a question brings the information as to the added cost and the subject is closed. Perhaps there are some who are disappointed in the progress of these novelties. But the interest of the average visitor in these items proves beyond a doubt that the great public is not motor wise. The same is very true concerning the interest of the visitors who pays his 75 cents

admission in models that are new to him, but which the automotive man has classed as "old stuff" for a month or more.

Any one watching this crowd cannot escape the fact that new models of well known cars are objects of great interest and the usual inquiry or private comment as the visitors enter an exhibit space is concerning new cars. Any new body model received its share of attention.

There are a number of cars that are new to the public. The Chrysler is the only new car with a new name and as it was shown before being priced, there was a considerable attention given to it.

As rivals for attention there are new Peerless Six, the Templar Six, the Essex Six, the Stutz Speedway, Moon with a line priced upward from the phaeton at \$995 and the lower priced Velie line.

New bodies were shown by Dodge in phaeton, sedan and coupe. These are added models and are priced higher than the regular line. Buick has new bodies, designated as country club, town car and limousine on the six cylinder chassis. Nash is showing a new six cylinder sedan. Auburn has a new English coach; Lexington a concord phaeton. A considerable portion of these new models have balloon tires.

The new showing of four-wheel brakes included Jordan, Columbia, Barley, Durant, Star, Anderson, Pierce Arrow. The first three are Lookheed brakes, the other four of the mechanical type.

Few Price Changes

There were comparatively few price changes announced and little curiosity was evidenced in this line.



in which this, the largest automobile show ever staged, is being held

There is a good deal of optimistic talk about the show and hotels as this show opens. A greater sprinkling of factory executives are on hand this year than for a number of years previous. One reason for this is an interest in the general situation. A second reason is to see how the show starts and get a line on whether or not the public interest in the automobile is waning. A third reason is that the National Automobile Chamber of Commerce is holding more meetings during the week than in previous years and these meetings are of more importance to the industry.

The N. A. C. C. is taking up seriously the work of trade promotion as the obvious market for motor cars appears to be growing more and more mysterious. The manufacturers realize fully their responsibility for the traffic and economic situations their vehicles have created and they are devoting more study to the solution. They hope to take the leadership in solving these problems and thus pave the way for a greater use for the vehicles.

Several of the committees that met last week are considering these subjects and their deliberations will run well into the next week. These meetings exact a full day's work from the manufacturer who comes to attend the sessions but in this work, they all realize that they are looking to the future not only of their own organizations but to the future of the entire industry.

"Motor Rodeo" Opens the Week

The first public function of the show week was a "Motor Rodeo" or dinner at the Plaza hotel on Friday night. Roy Chapin presided on behalf of the N. A. C. C. and writers for daily and magazine press were the guests. The highway situation was discussed and several phases of it discussed for the education of those present. Also a new highway promotion film, in which President Coolidge is an actor, was shown for the first time.

This film is based on the idea that the farmer "pays for the improved highway whether he has it or not." It shows in a graphic and interesting manner how great is the waste of lost time, lost markets, wear on vehicles and all of these items when the highway becomes impassable, as all unimproved highways do.

The leaders of the industry fall into two classes. Those who believe that the 1924 production will be 4,000,000 vehicles or more and those who believe that the 1924 production will not equal that of 1923. It must not be thought for a moment that the latter class are pessimistic, for they are not putting their figures at a point that would indicate that they believe that there will not be a notable slump in the market.

All of the leaders are apparently agreed that there will be a lot of automotive vehicles manufactured in 1924 and their difference in view is, after all, only a minor fraction.

The dealer has not become an important factor in this show picture at this writing, that is except the Bronx dealers. The dealers in this populous section of Greater New York are the most enthusiastic bunch of men you can find anywhere. Although their part of the big city approaches a million people, they have here-to-fore been rather submerged as compared with the Broadway merchants. But this year, the show deserted Manhattan and came to the north end of the Bronx Motor Row and the Bronx dealers are making the

most of it. And a lot of dealers and manufacturers are greatly surprised when the taxi along this Bronx Motor Row, for it is quite an institution even if it has not been on parade before the industry in previous years.

These Bronx dealers have been quite free with their aid to Sam Miles, the veteran manager of the show, and their cheerful predictions that anything that happens in the Bronx cannot fail, has assisted in keeping the manager's spirits above par when the Broadway dealers dispensed gloom. Only during the last few days, after the decorations were in place, did the Manhattan dealers warm up to the show. But that is not surprising, as last year quite a number of the New York dealers failed to display posters announcing the show, even when it was held without a few blocks of their places of business.

This show gives to the equipment, unit parts and accessory manufacturers the best showing they have ever enjoyed in a New York show. The fact that all but a few of the late comers were on the main floor was a distinct advantage to these exhibits. In previous shows it has been comment that the fourth and first floors of the Grand Central Palace would be crowded and the other two floors neglected. There is no section of this great floor deserted. The accessory sections were at the ends of the floor and always get their share of the visitors. Where ever there is something moving, something radically new or a particularly bright exhibit, there is a crowd. In one section several lamp exhibits were grouped and here the aisles were quickly blocked.

It was commented by those long familiar with shows that the exhibits in this section is in better taste. The large signs that rather marred the exhibits are missing and many cases of improved taste in form of exhibit and literature were noted.

Of course the shock absorber with their moving exhibits attracted crowds, just as they always have. Visitors stand around these exhibits rather in awe of the performance staged. It would be a strange show that did not have its share of these exhibits and we believe that many visitors would be greatly disappointed if they could not point out some cases of where the springs that make the severe jolt are obviously not the same as the smooth running springs.

Impractical Novelties Absent

There is lacking this year the silly novelty or the accessory that make the operation of the car a matter of income rather than expenditure. Those who are ambitious to become rich as manufacturers seem to have learned the simple lesson that a great business cannot be built upon a toy that has no place in economic scheme.

There are not so many newcomers in this section of the show as usual and those who are there appear to have a chance for life if they know how to place their goods on the proper market.

The usual trimmings outside the show are there only to a slight extent. It may be because of the weather, or it may be that the fakir has not realized the change in location. A few special signs indicate that some manufacturers thought of it but large shows new to this section of New York and the permanent residents did not rise to the occasion as merchants in the old section did. The freak vehicle that some enthusiast had at the curb to attract attention is not there at all.

23 Years Ago This Week In Motor Age

Text of an Advertisement

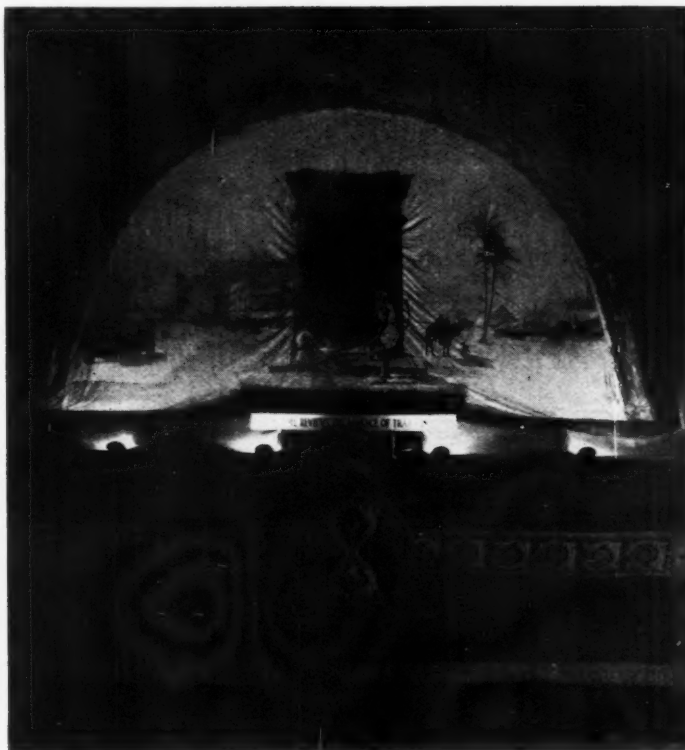
"Gray & Davis" stamped on side lamps or headlights means what "Sterling" does on silver—an absolute guarantee. Insist on having them on your new carriage. Mobile special—prices: Oil, per pair \$7; acetylene, per pair \$9.50. Oil found extra large; will burn 14 hours. Guaranteed not to jar out. Very best materials. Gray & Davis, Automobile and Carriage Lamp Manufacturers.

There Were Used Cars Then

A bargain sheet offering about a dozen automobiles, mostly slightly used and shop worn Locomobiles, has been issued by the Rochester Automobile Co. Mr. Mandery, who is proprietor of this concern, has chosen this inventory sale at reduced prices as the most feasible means of clearing up his stock of machines.

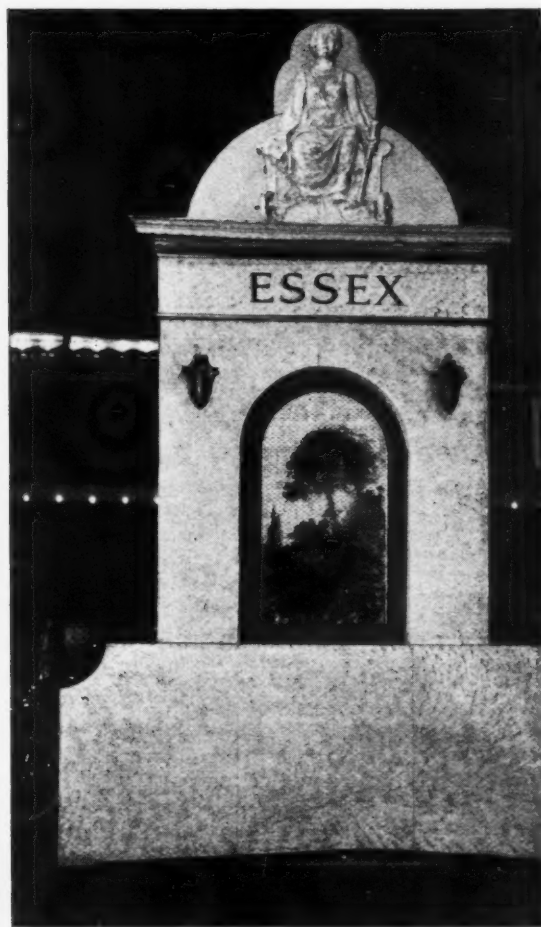
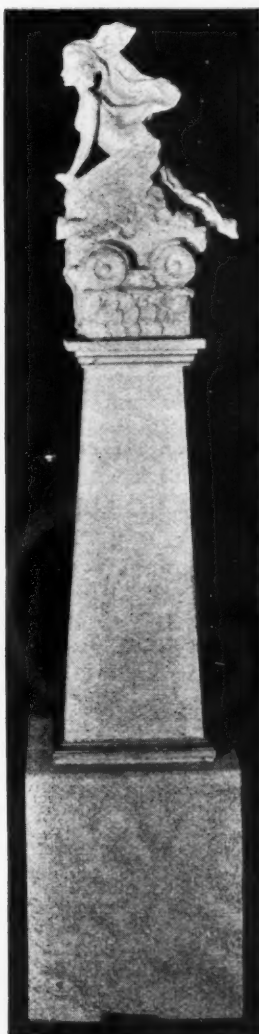
Mossberg Is an Old Name

ATTLEBORO, Mass., Jan. 4.—The U. S. Automobile Co. of this place is presided over by that clever and engaging genius Frank Mossberg, of the Frank Mossberg Co., which concern makes among other things bicycle and automobile bells. A MOTOR AGE man recently asked Mr. Mossberg how the U. S. company was progressing and the reply indicated that he was not worrying over any possibility of failure. The U. S. automobiles are made in various patterns, ten models being shown in the catalog which is now ready for distribution.



Above are shown the panels which adorn the two ends of the hall and represent the development of transportation

Below may be seen close-ups of the obelisks which mark each of the car exhibits at this year's New York Automobile show



Statistical Picture of Ten New York Shows

EXHIBITORS AND EXHIBITS

	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924
Total Exhibitors	317	319	323	331	198	307	307	337	356	294
Total Car Exhibitors							86	87	78	73
Total Accessory Exhibitors	223	306	227	252	141	225	221	250	278	221
Total Number of Vehicles Exhibited	228	264	282	263	225	334	341	310	283	347
Total Number of Stripped Chassis Exhibited	51	56	54	34			35	36	42	39
Total Number of Taxicabs Exhibited										11

†BODY STYLES (Gasoline and Steam Cars Only)

Open Cars	175	194	195	175	127	176	163	158	127	117
2-3 Passenger	51	76	68	40			40	29	14	16
4-5 Passenger	129	125	140	143			91	102	92	91
6-7 Passenger	129	125	140	143			32	27	21	10
Closed Cars	36	28	37	77	79	119	120	149	155	180
2-3 Passenger	7	6	6	13			23	37	19	21
4-5 Passenger	3	2		43			80	80	101	121
6-7 Passenger	19	14	19	8			27	32	35	38

‡ENGINE CHARACTERISTICS (Gasoline Cars Only)

Four Cylinder	146	158	146	94	40	65	80	84	83	66
Six Cylinder	160	154	161	171	141	223	213	204	199	188
Eight Cylinder	8	50	55	40	34	29	31	41	37	43
Twelve Cylinder		17	16	9	8	7	3	2	1	0
Poppet Valves	213	347	270	252			321	319	307	285
Sleeve Valves	5	15	2				12	8	12	12
"L" Head							180	206	209	204
"T" Head							29	15	12	8
Valve in Head							119	86	83	67
Valve in Head and Side									16	6

†WHEELS (All Cars)

Artillery							215	229	235	128
Wire							70	67	21	2
Disc							56	37	71	145

†FOUR WHEEL BRAKES

Standard Equipment										44
Optional at Extra Cost										37

†BALLOON TIRES

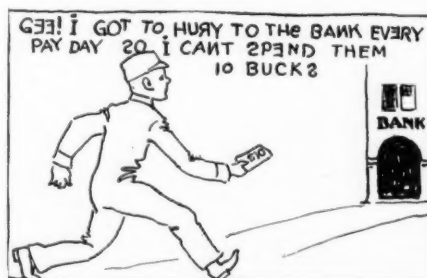
Standard Equipment										14
Optional at Extra Cost										46

References—† Less Taxicabs. ‡ Including Taxicabs.

DAN'S DIARY

JAN. 10—Gee i can see already that 10 bucks is going to be a bunch of money to get along without it every weak for a year but holy smoke if a guy that aint got no one but his own face to fead cant do it how is he going to do when he gits a family. He cant thats all. If he gets a rase his wife has to have a new set of dishes or a fur coat and if he gets a nother raze then he thinks he can afford a closed car. As far as i can sea the quicker a guy gits started the sooner he gits there and as long as its got to be done me not having any relatives or rich frends to slip me a loan i might as well start now.

I told my girl what i was going to do and i thot she wouldnt like it becuz she wouldnt get took many places but gee wimmen is funney, insted of being sore



she was tickled to death and kep saying how glad she was that i was going to save my money. Maybe she thinks like me that its easier now than after we get married. I aint told her we was going to be married but i gess she knows, wimen get wise to things like that they are sure funney that way.

I gess she thinks she would rather mary a guy that is boss than a shrimp

that is working for a prune like my boss wich you can never tell whether he is going to make you work all night or can you except you know he would be afrade to can you but only wants to skare you so you will work harder.

At the request of the Boy Scouts of America the Rickenbacker Motor Co. has changed the prize-winning name of the Rickenbacker Scout model to Rickenbacker Sport roadster. This action was taken because of the privilege conferred on the Boy Scouts of America by Congress, protecting the organization against infringement of the name, special titles and words or phrases peculiar to the Boy Scout organization. The model was named following a nation-wide contest which brought in more than 10,000 suggestions, the winner of the \$100 prize being J. H. Tolle of Deming, New Mexico.

Much of Mechanical Interest in New York Show

New Chassis and Brake Features Are Highlights for the Initiated, While a Number of Body Jobs Are of Interest to the Public

WHILE there are a great many new chassis at the show as far as the general public is concerned, all of the new cars are familiar to the trade, as they have been announced through *MOTOR AGE* during the past few weeks. The Peerless Six which makes its bow for the first time at the show and the new Moon which has been mentioned briefly in news dispatches are the possible exceptions.

Nevertheless, there is no dearth of interest from the mechanical standpoint at the show. In a great many ways it is the most interesting show from this standpoint that has been held in some years. As expected the balloon tire and the four-wheel brake are very much in evidence but neither are by any means universal.

Many of the real innovations of the year are not visible. Passing from booth to booth and reviewing the cars shown this year as compared with those of a year ago, it is possible to find a wealth of detail improvement of the highest importance. The improvement in the equipment and even in the design and manufacture of the cars in some cases is remarkable.

Among the new cars, the Chrysler is attracting considerable attention. The equipment of this car includes four-wheel brakes, built-in thermostat, air cleaner, oil filter, pressure chassis lubrication and balloon type tires. As this is a new model throughout, the designers have been at liberty to go the limit on what they believed to be best up-to-date practice and the adoption of these items of equipment is significant of what may prove to be accepted practice.

One of the most interesting features at the show to many in the trade is the remarkable alteration in the appearance of the Dodge cars effected by the fitting of balloon tires. While the bodies are the same as previously, the smaller wheels lower the car to such an extent

that they present a surprisingly altered exterior.

The four wheel brake installations are found on more than thirty makes of cars and the popularity seems to be divided between the mechanical and hydraulic types. The Durant lines are all fitted with brakes of their own design, even the little Star being shown in a special model with a shoe type of brake on the front wheels. The Durant brakes are all mechanically operated. A surprisingly large number of makers brought out hydraulic brake equipped chassis just in time for announcement at the show and two or three who have not appeared with four wheel brakes are telling at the show that their cars will be shortly equipped with them.

There are fewer stripped chassis in evidence this year, and they are missed by the spectators. Around those that were exhibited there is always a cluster of interested people indicating the value of this type of exhibit. The Cadillac cut away chassis was remarkable for its completeness, even surpassing that shown a year ago. The Essex and Hudson chassis were polished on the cast iron and steel itself instead of being nicked and were good examples of show chassis work.

Some of the balloon tire installations showed somewhat too little clearance between the balloon tire and the wheel housing, indicating that this sort of equipment will have to be borne in mind on future body designs.

One of the cars that showed changes which were announced before the show is the Rickenbacker. This appeared with a deeper radiator and higher hood which have materially altered and improved the appearance of the car. The engine is now fitted with a heater box cast integrally with the exhaust manifold which is for the purpose of providing warmed air to heat the interior of the car. This is standard equipment for

both open and closed models.

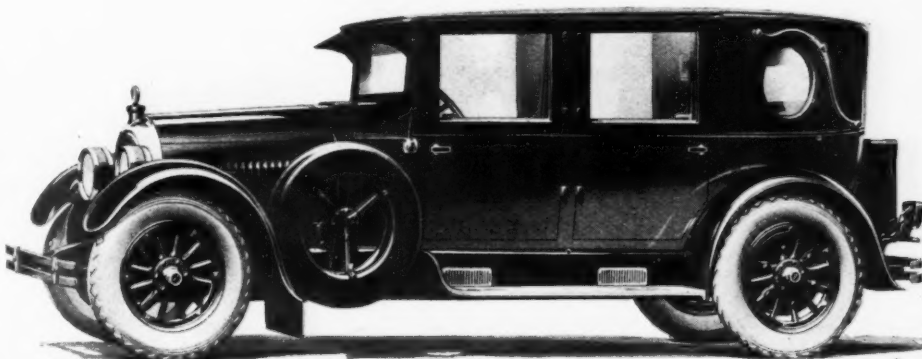
There are a great many little features of design apparent on the engines which show attention to detail. The Maxwell front engine mounting is now a small leaf spring instead of a trunion. This permits the engine to rise and fall in the frame to the limits of the spring and consequently prevents communication of vibration from the engine to the frame.

Cadillac is exhibiting its new crankshaft and the entirely changed construction of this is coming in for considerable attention. Lecturers at all of the booths where mechanical features are being displayed are calling attention to the better balance of the engines resulting from heavier crankshafts, stiffer crankcases, counterweights, etc. They are also calling attention to better distribution of the charge. A great many have altered manifolds this year and these are on display. The Hudson engine is an example of this, the overhead hot air pipe having been abandoned, and the intake and exhaust concentrated on the right side of the engine instead of one being on the left and the other on the right as previously.

The wealth of detail changes and improvements in the chassis is matched by similar detailed improvement in bodies. Some like Buick, Rickenbacker and the Studebaker Special Six, appear with entirely different radiator forms this year. Where bodies have been revised to any great extent they have tended towards the high narrow front. There are not so many trunk equipped models as last year, but those that are so equipped have substantial trunks of better manufacture and the trunks blend better into the bodies. Better regulators for the windows, more attractive dash equipment and greater durability in the coach type of bodies are noticeable. More leg room in the closer coupled types of closed bodies is also a practically universal improvement.

Hydraulic Brake Demonstration

THE Four-Wheel Hydraulic Brake Co., Detroit, manufacturer of the Lockheed four-wheel brake, has an interesting display at the Commodore where it is showing a cut-away chassis minus wheels, with brake drums cut away and lighted within by electric lights so as to show the details of the braking mechanism. To show the principles of hydraulic operation and illustrate in a graphic manner the pressure obtainable in a hydraulic four-wheel brake the company is showing an apparatus which approximates a brake layout so mounted on a table that the visitor can apply the brake and see the pressure registered on gages.



The new Kissel model 55 seven-passenger sedan

Dodge Has Special Equipment

FROM the standpoint of what can be done by special equipment, Dodge provides one of the most interesting exhibits at the show. Among the Dodge exhibits there are three special models equipped with balloon tires. These lower the cars to such an extent that while the bodies are the same as on the standard cars, they give the impression of being entirely new.

In addition to these specially equipped cars there is a new Fisher four-passenger coupe body added to the line. This new car sells for \$1375. It is upholstered in mohair and the interior is designed along standard four-passenger coupe lines. The extra seat beside the driver's seat folds out of the way when not required and the side seat is set considerably back of the driver's seat to provide better vision for the driver as well as room for the extra seat and leg room for the passengers. There is a package space back of the driver's seat and storage room beneath the rear deck.

The three special cars shown are a sedan, four-passenger coupe and a touring. The special equipment includes 30 by 5 in. balloon tires, nickel plated radiator and trim, bumpers, automatic windshield wiper, special motometer with cross bars and in the case of the special coupe there will be a different paint job although this is not at the show. The prices on the specials are: special sedan, \$1545; special four-passenger coupe, \$1535; special touring, \$1040.

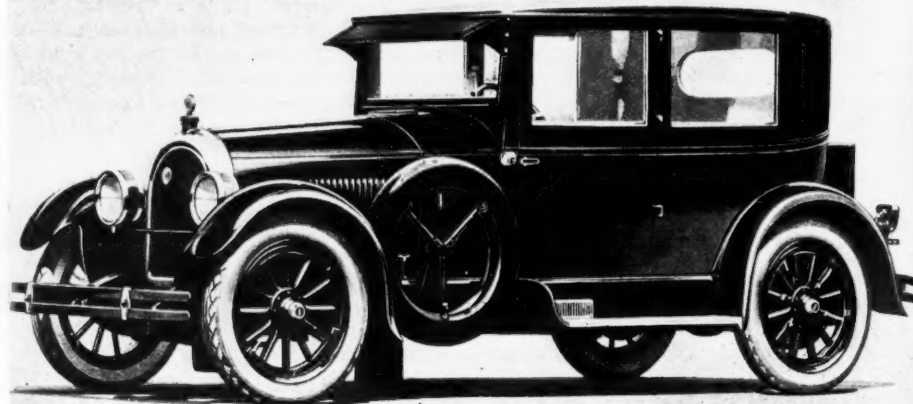
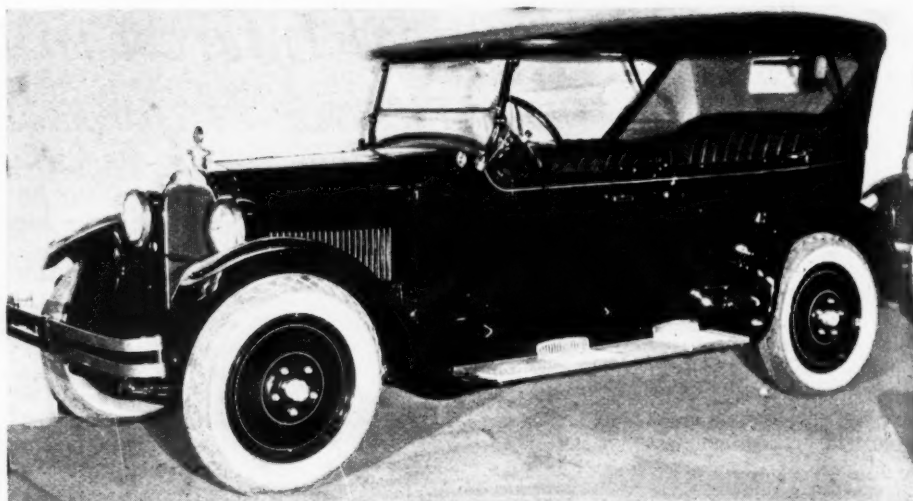
McFarlan Shows Three Cars

McFARLAN shows a five-passenger phaeton, a five-passenger sedan trimmed in gray leather and a dark maroon limousine. The sedan is mounted on the new light six chassis. No. 10 Head here —?

A feature of the Star exhibit is a sport sedan and sport phaeton each of which is equipped with four-wheel brakes. The front wheel brakes are of novel design and are said to be obtainable on all Star models at \$30 additional.

In design the front wheel brake is quite different from any other type which has been shown heretofore, at least in this country. The brake itself consists of a pair of shoes, one of which bears against the inside, and the other against the outside of the front wheel drum. When the two shoes are drawn together they have a tendency to clamp the drum between them and thus apply the desired braking effect.

The shoes cover about one-sixth of the drum circumference and are anchored at their centers to the cam which operates them. This cam is fastened to a short shaft which is positioned somewhat below and in back of the front axle. To the same shaft is attached an actuating lever which projects forward and contacts with the lower end of a pin running concentrically through the knuckle

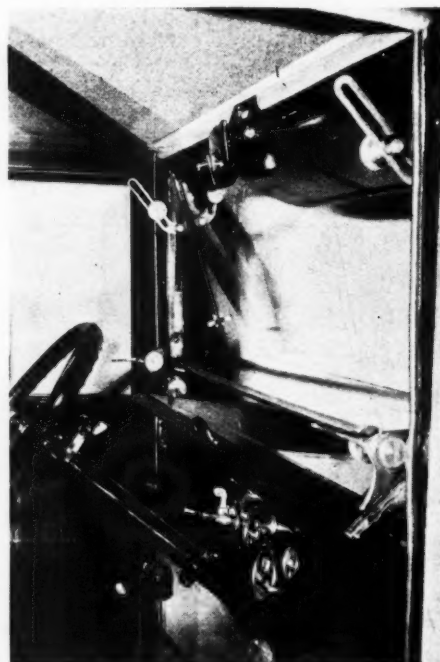


Above—The new Dodge phaeton
Below—Kissel model 55, five-passenger Victoria

pivot. The upper end of this pin contacts in turn with one arm of a bell crank which moves in a vertical plane and is attached to a bracket on the axle center.

To the other end of the bell crank is attached a short pull rod which runs

along the top of the axle and connects to a second bell crank which turns about a vertical axis. The inner end of this bell crank is quite close to the spring and moves through an arch approximately parallel to the spring. It is attached to a second pull rod the rear end of which is pivoted to an arm on the brake pedal shaft. This mechanism is, of course, duplicated on each side of the chassis. Front brake drums are enclosed by a stationary cupped plate which is cut away at the point where the brake shoes bear.



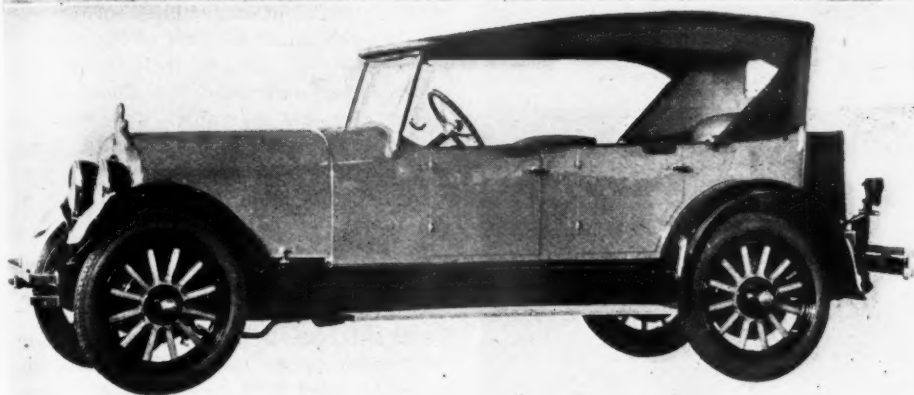
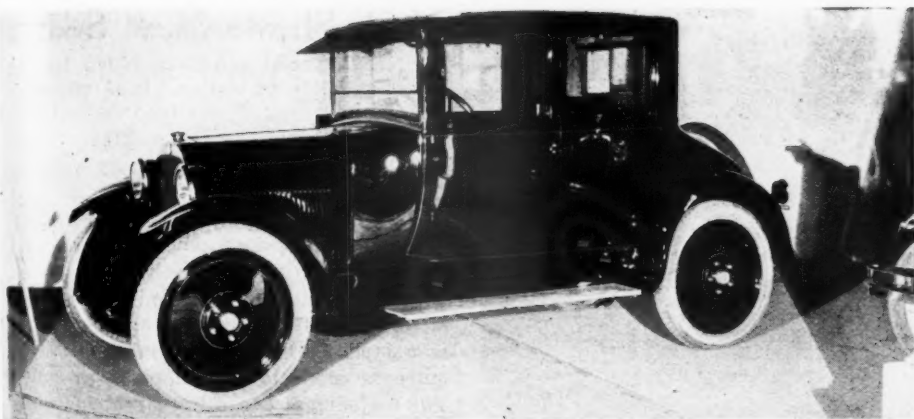
New adjustable windshield on Dodge car

Chrysler Line Shown

THE Chalmers line is represented by only the five-passenger standard phaeton and the seven-passenger sedan which remain unchanged. The bulk of the Chalmers space, however, is given over to the exhibit of Chrysler cars. The Chrysler cars shown include a two-door five-passenger sedan, two-door five-passenger sedan and a five-passenger phaeton.

Packard Sixes and Eights

FOUR-wheel brake equipment is the dominating feature of the Packard display, the sixes and eights all having this feature now. The six has been only recently in production with four-wheel brake equipment. An attractive stripped chassis is shown with a plate glass dash.



Above—Fisher body fitted to Dodge coupe
Below—Templar suburban touring body

Brand New Templar Shown

TEMPLAR displayed its new line of six-cylinder cars fitted with four-wheel brakes. These include a five-passenger phaeton at \$1895, a four-passenger "suburban" phaeton at \$1995, a four-passenger, four-door "brougham" at \$2,459 and a five-passenger sedan at \$2595.

Body lines are quite different from earlier models. The new nickel radiator has parallel sides and curved top.

The former four-cylinder engine is replaced by a $3\frac{1}{2} \times 5$ in six with side instead of overhead valves, cylinders integral with crankcase, combined inlet and exhaust manifold, seven main bearings and helical timing gears.

Merchant & Evans single plate clutch, Warner gearset, three-quarter floating rear axle, standard U. S. front axle with brakes and inclined knuckles and Ross steering gear are some of the other units employed.

Two New Velie Models

VELIE'S line has been extended to include two new "56" models in the form of a phaeton and a sedan which list respectively at \$1095 and \$1545. These are mounted on a chassis which is practically a duplicate of the model 58 which is continued with the various body models which have made up the Velie line for some time. The new bodies are both five-passenger jobs and both are finished in high bake enamel which is said to be applied to the body panels before

they are attached to the body frame.

Velie 58 closed models are now somewhat lower and are fitted with crowned roofs. The chassis remains about as heretofore except that it is fitted with a Salisbury axle with front wheel brakes and 6.20 in. balloon tires at an additional

charge of \$100. The brakes used are a contracting band type and are actuated by a shaft carried in brackets attached to the upper side of the axle center at each end. The Velie engine is practically unchanged except that the connecting rods are now drilled to supply oil direct to the piston pin instead of using separate tubes connected to the rods.

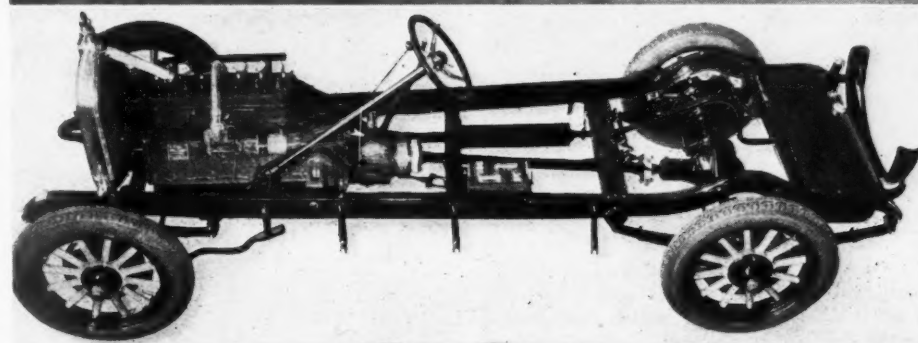
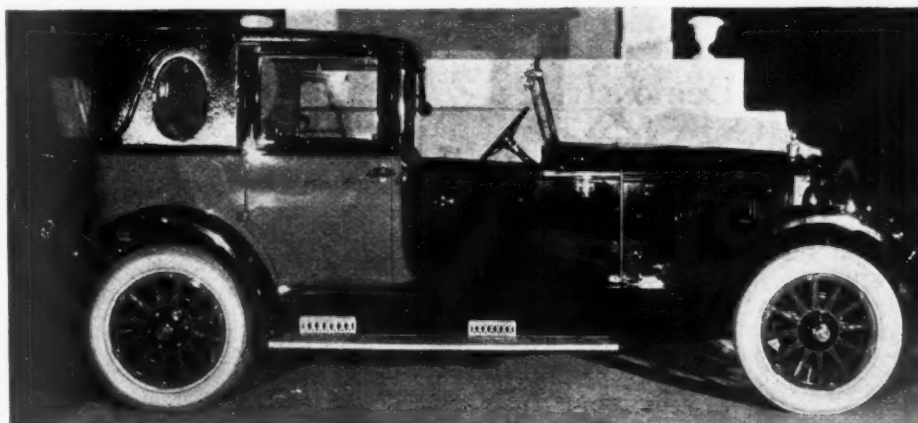
La Fayette Models

ON the La Fayette stand may be seen a two-passenger roadster with rumble seat having a compartment in the rear so arranged that a golf bag can be stowed away in it; a torpedo with balloon tires, a Landaulet-coupe, and Imperial limousine and a beautifully finished show chassis. All mechanical features remain the same.

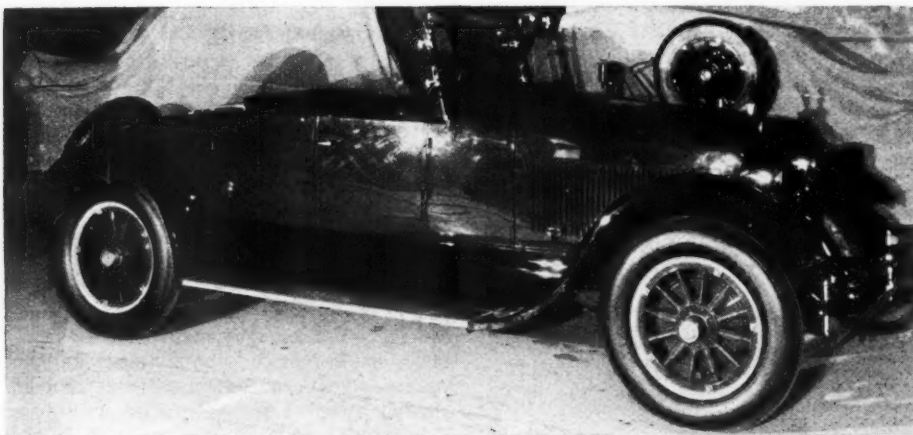
Premier With Optional Specialties

THE Premier line for 1924 is shown without any substantial change in design. It has a six-cylinder engine with bore of $3\frac{3}{8}$ and stroke of $5\frac{1}{2}$ inch, the wheelbase being $126\frac{3}{4}$ inches. Balloon tires may be fitted to any model at an extra cost of \$150, the size being $33 \times 7\frac{1}{2}$. Four-wheel brakes of mechanical type, made by the Columbia Axle Co., are also fitted as extra equipment at an extra cost of \$150. Where desired a magnetic gearshift replaces the hand gearshift, the extra charge being \$150. The prices for the 1924 line are as follows:

Roadster	\$2535
5-pass. sport phaeton.....	2585
7-pass. phaeton	2585
5-pass. brougham	3385
7-pass. sedan	3585



Above—The new Buick town car
Below—New Templar chassis shown for first time



The special green Jordan roadster

Four Wheel Brakes and Balloon Tires Available On Jordan

ONE of the surprises registered at the show is the fitting of four-wheel brakes to the Jordan car as extra equipment. These brakes are Lockheed and are put on at an extra price of \$75. Balloon tires are also optional equipment, the extra price being \$145 per set of five Firestone tires on wood wheels. The size is 32x6. Several distinctive paint jobs are on exhibition, one of these being a brougham with a satin finish maroon. A Napier green roadster makes a striking appearance in the front of the exhibit. This is a special job with a number of extra features and the top is completely removable. No changes whatever have been made in the chassis except such as are necessitated by the mounting of the four-wheel brakes.



Jordan front wheel brake

Overland Demonstrates With Cut Chassis

THE Overland and Willys Knight exhibits include the current models on both lines, including the Overland Red Bird and Champion. A chassis of the Willys Knight has been very attractively prepared for the show, being finished in nickel for the steel parts and cut-away sections colored in blue and red. The frame is in cream enamel. Attractive paint jobs are the Willys Knight four-door sedan, colored in Willys' blue, and the Willys Knight three-door coupe sedan in Rolls-Royce blue.

Dupont Two-Passenger Roadster

THE Dupont line, which includes a two-passenger roadster and a four-passenger phaeton, each of which lists at \$1990, and two sedans which are identical except for a glass partition between front and rear seats which is used in one case and not in the other, was represented by two open and one closed job

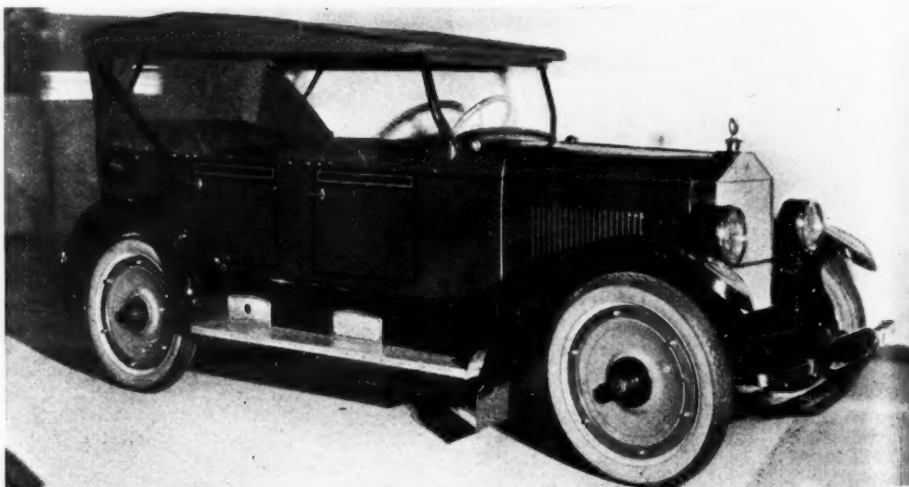
Nash Shows New Sedan

A NEW special sedan is added to the Nash line of bodies. It is mounted on a six-cylinder 121-inch wheelbase chassis and the price is \$1640. The upholstery is in blue upholstery and the equipment includes a clock, heater and silk curtains. Other closed models include the four-door coupe, Victoria and cabriolet continued as before. Disk wheels are standard equipment on the Model 698. The finish on the new sedan is a striking blue, which is said to require 24 separate operations to produce. The instrument board is rearranged with three convenient assemblies of instruments, each under a panel of heavy plate glass. The equipment includes a rear view carrier, automatic windshield wiper, clock, kick plates, vanity and smoking sets, car heater, reading lights, vase, silk curtains and arm rests. The sun visor is built in as an integral part of the top.

Lexington Has New Line

LEXINGTON is showing a new line known as the Lexington-Concord six which is fitted with two types of bodies, a sedan at \$1845 and a phaeton at \$1395. The new model is fitted with the Ansted engine, with a bore of 3 5/16 and stroke of 4 1/2. This is the same engine as is used in the Minute Man and other Lexington models. The wheelbase on the new model is 119 inches, being four inches shorter than the Minute Man. The gearset is equipped with a lock.

Balloon tires are extra equipment on all models of both the Concord and Minute Man. On the Concord and extra price of \$100 is set for five special disk wheels and five balloon tires, the sizes being 32x5 1/4. An extra price of \$35 is charged for five disk wheels with the regular tire equipment. Balloon tire equipment and wire wheels for the Minute Man six is \$175. Price increases ranging from \$50 to \$100 have been made on the Minute Man six model.



The Elcar five-passenger phaeton

New Bodies On Wills-St. Claire

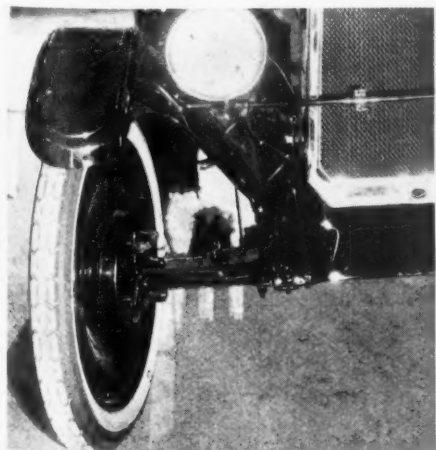
AN entirely new line of bodies on 127 in. wheel base and a number of chassis improvements are exhibited by Wills-St. Claire. The engine has been refined in a few particulars notably in a new firing order which is claimed to provide a more uniform effort on the crankshaft and consequently gaining smoothness, an improved lubricating system and a new form of gear, producing more quietness in the front end drive. The clutch has been altered, having a single large disc with the lining woven into the aluminum disc instead of being applied to its surface. The new clutch is claimed to weigh less in its rotating parts and consequently provides more rapid and quiet gear shifting.

There is now a single exhaust muffler of larger size involving a larger exhaust pipe, lessening the back pressure and increasing quietness and efficiency. Balloon tires and four-wheel brakes are now provided.

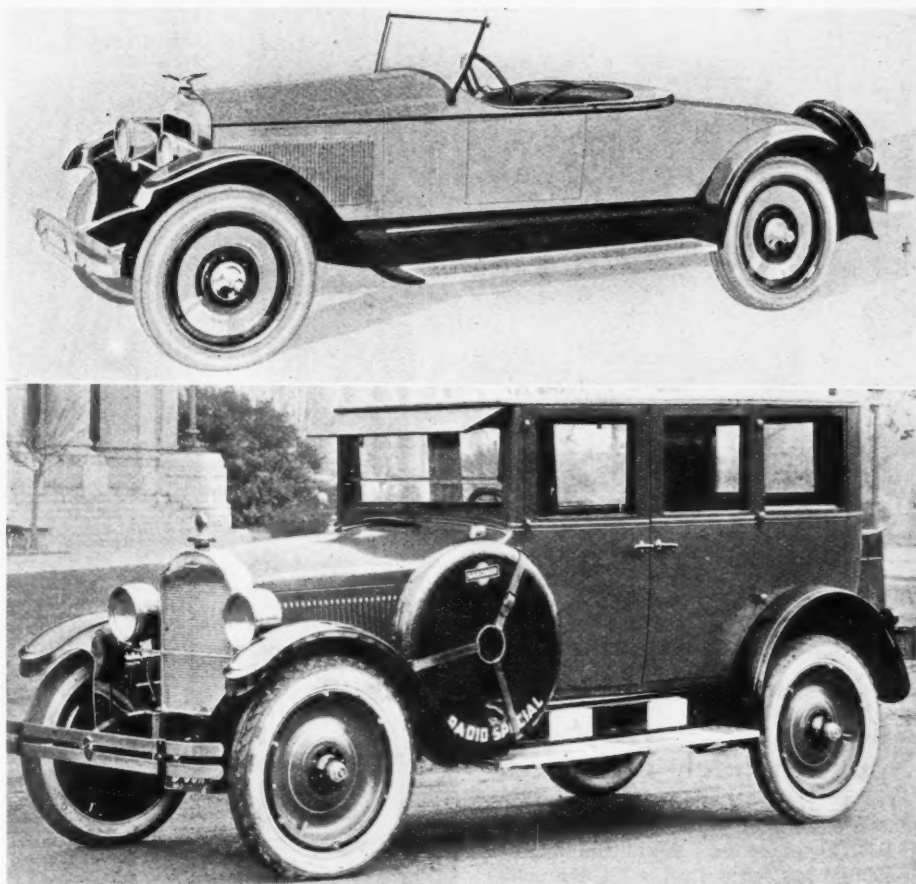
There are several new body models including a 7-passenger sedan, 5-passenger sedan, 5-passenger brougham, 4-passenger coupe, 5-passenger sport and 4-passenger roadster.

Stutz Speedway Six

THE Stutz Motor Car Co. show their new Speedway Six. This model is fitted with Lockheed four-wheel brakes at an extra cost of \$85, and balloon tires are fitted at an extra cost of \$110, making the extra charge for both features \$195. These options are not offered on the other lines of the company. Prices have been set for the Speedway Six models with standard equipment as follows: five-passenger sportster, \$2650; seven-passenger open touring, \$2685; five-passenger closed sport brougham, \$3350; seven-passenger suburban sedan, \$3500; seven-passenger berline-sedan, \$3500. A very material price reduction has been made in the three-passenger Speedway Four sport coupe, which formerly sold for \$3750 and has been reduced to \$3250. No mechanical changes have been made in the older models.



Front wheel brake on the Star car



Above—Wills St. Claire four-passenger roadster

Below—Gardner four-door sport sedan

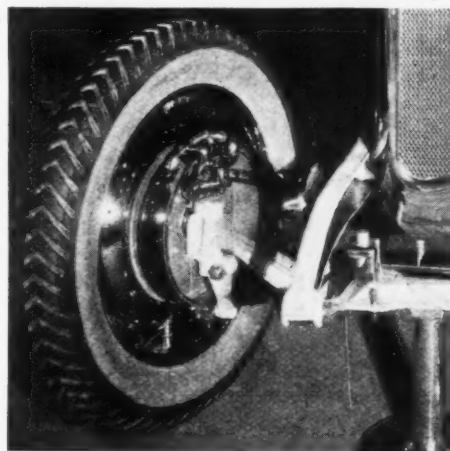
R & V Models With Built-In-Trunk Fabric Bodies On Four Cars

WHILE the R & V models have been using the built-in trunk for some little time, nevertheless this feature of R & V design stands out conspicuously. The built-in trunk is supplied as a regular part of the car on all models with the exception of the seven-passenger sedan. Several special paint jobs are displayed, including a club sedan finished in Nicene blue with gold striping priced at \$3050 and a seven-passenger sedan finished in pelican gray around the panels and a darker gray beneath the belt line. This latter model lists at \$3250.

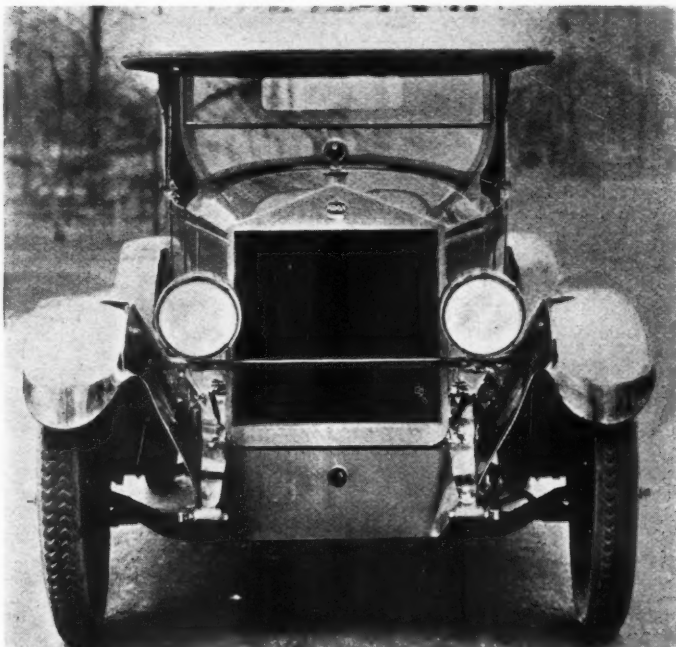
FOUR cars displaying Meritas fabric bodies are being shown at the Commodore. This display includes the original Meritas body on a Packard chassis which was shown last year and which has since seen 20,000 miles usage, a three-door Dodge Bros. sedan, a Berline on a Lincoln chassis and four-door Ford sedan. Each of these bodies is being produced by a different company under license from the Fabric Body Corp., Detroit.

Columbia Features Stripped Chassis

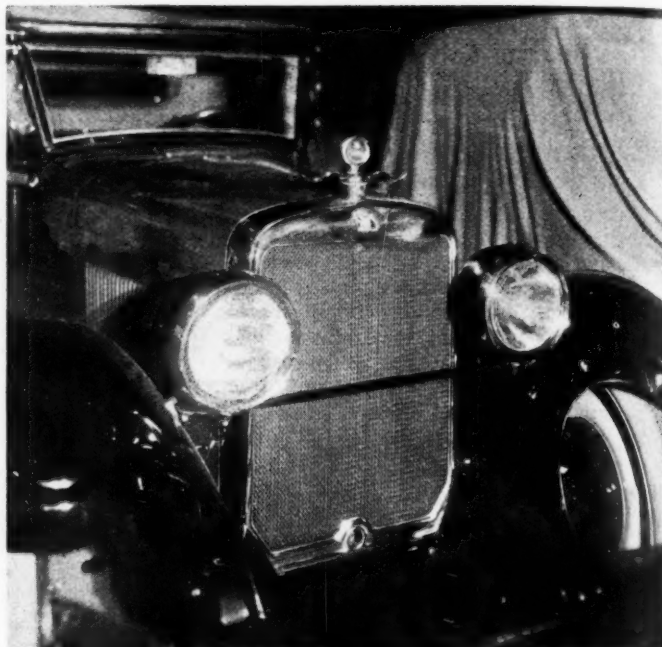
COLUMBIA'S exhibit includes a blue sport phaeton with disc wheels, a two-door sedan painted gray, and a maroon sedan. The model 7-U Continental A1 engine is now used in place of the model 6-Y and Lockheed four-wheel brakes are furnished as optional equipment at an extra cost of \$75. 5.25 in. balloon tires are furnished as extra equipment for \$50 additional. When balloon tires are furnished these are mounted on disk wheels. A feature of the Columbia exhibit is a stripped chassis painted white and fitted with Miller balloon tires and the Lockheed four-wheel brake system.



Front wheel brake on the Columbia car



New Moon six-cylinder car which sells for \$995



New design of radiator seen on the Rickenbacker

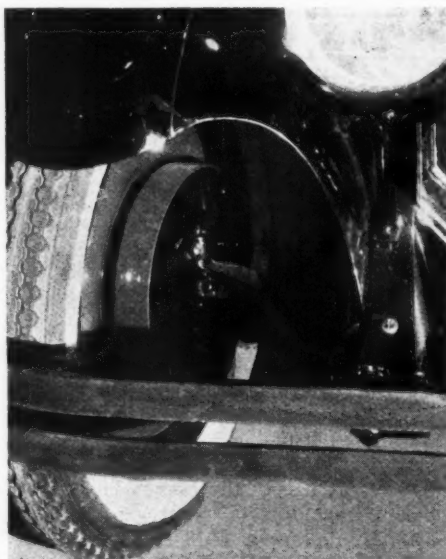
Sport Model Dropped From Cleveland

THE Cleveland line is continued practically as before but with the addition of a de luxe sedan. The sport model previously in production has been discontinued. Price changes have been made in a number of the body models but the phaeton remains at \$1045.

A few minor detailed changes have been made, including a higher radiator which raises the hood one inch back to the cowl. The bodies are Fisher built and panelled in blue. Metal running boards are now furnished on all models with the exception of the touring de luxe on which steps are optional equipment at an extra cost. A new and positive method of lubrication has been incorporated into the engine design and a Bosch automatic ignition advance has been added. A new type carburetor is fitted to the internally heated manifold. The oil drain and filler are on the right side of the engine, facilitating drainage of the crankcase without crawling underneath the car. The tierod has been redesigned to take up wear after long service. The clutch contact surface has been increased to ten inches. Balloon tires are fitted as extra equipment on any models at \$70 extra. The size is $31\frac{1}{2} \times 5\frac{1}{4}$. Disk wheels are fitted at \$30 extra.

Dort Shows Complete Line

DORT has on view its complete line, which includes a standard and a sport phaeton, a coupe, sedan and "brougham," all of which are five-passenger models. The coupe and brougham are three-door closed jobs which differ

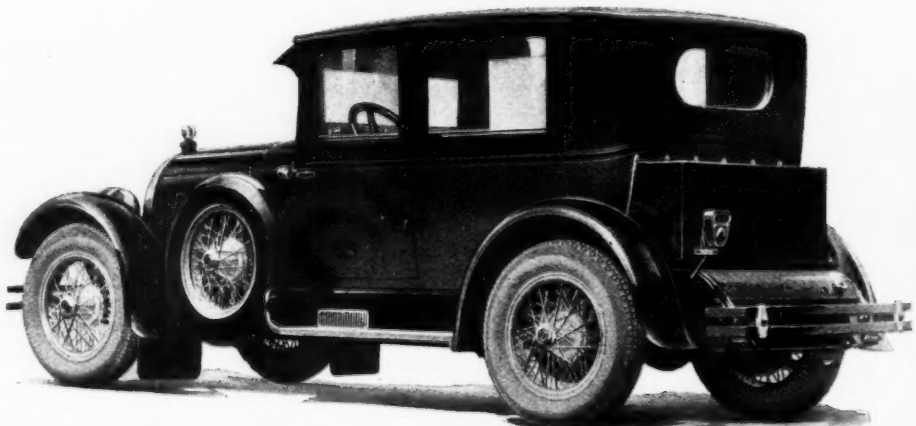


Front wheel brake installation as it appears on the Flint car

only in respect to the front seat which is a full cross seat in the case of the brougham and a divided folding seat in the case of the coupe. It is announced that 5.25 in. balloon tires will be furnished at \$100 additional on the brougham, coupe and sport phaeton and at \$125 additional on the sedan and standard phaeton. A cut away engine designed to show the lubricating system and various mechanical parts was a feature of the Dort exhibit.

Apperson Models Have Gear Shift

APPERSON BROS. Automobile Co. exhibit their six-cylinder model in a sport phaeton and sport sedan, both five-passenger cars, and their eight cylinder model in a five-passenger sedan and a seven-passenger phaeton. All models are fitted with the Cutler-Hammer mechanical gear shift. Four-wheel brakes and balloon tires are optional on the six cylinder models at additional cost.



Kissel model 55 five-passenger Victoria showing trunk equipment

Marmon Adopts Balloon Tires as Optional

NORDYKE & Marmon Co., of Indianapolis, has announced the adoption of balloon tires as optional equipment on all Marmon cars. Special tires will be mounted only on wire wheels, according to the announcement. Both balloon tires and four-wheel brakes can be had on any Marmon at a slight additional cost.

The balloon tires are 35½x37.3. Standard tires on Marmon cars are 33x5.

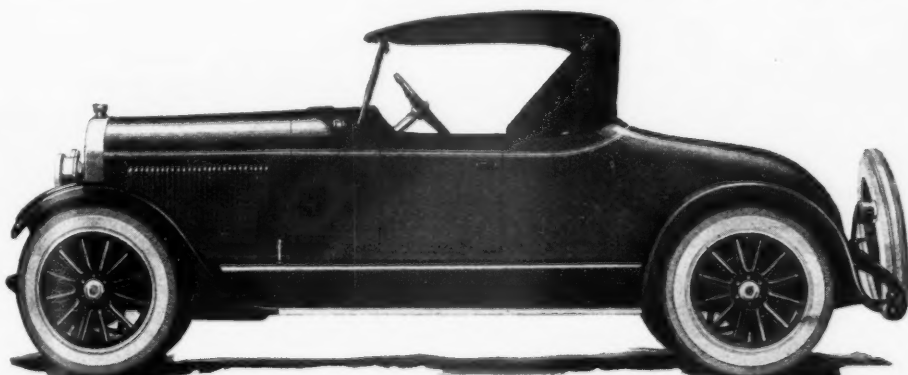
Cadillac Increases Prices

AN increase in price on the open models and a new seven-passenger sedan are the high points of interest in the Cadillac exhibit. The three open cars have been raised to \$3085. They were previously \$2985. The name of the five-passenger sedan has been changed to the Sedan De Luxe and the seven-passenger suburban is now known as the Suburban de Luxe.

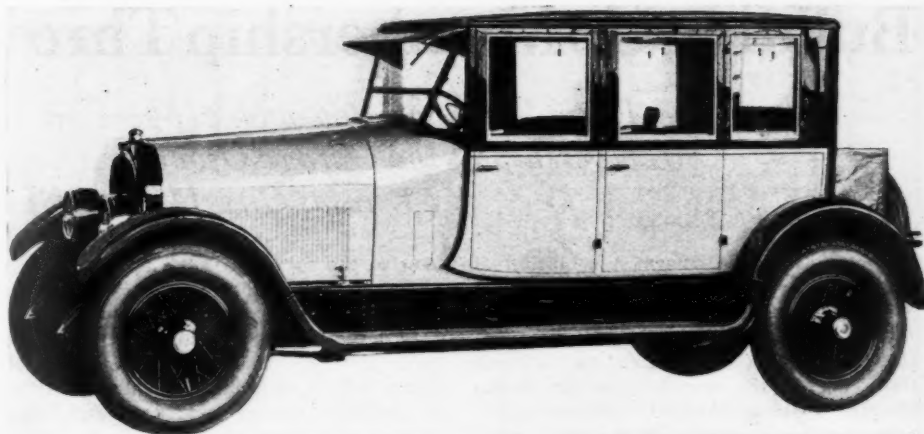
The new seven-passenger sedan sells for \$3585 which is lower than the previous corresponding body which it supplements. The new car is intended for rural and business trade and the reduction in price has been made possible by not permitting any option in upholstery or paint. The body is largely steel construction, without wood paneling, but with wood supports. It is built along the lines of the suburban de luxe but has a half-round mould on the belt line. An extraordinarily complete cutaway chassis is also being shown.

Four-wheel Brakes Optional On All Durants

THE striking feature of the Durant exhibit is the mounting of four-wheel brakes as extra equipment on any of the models at an extra price of \$35. Full details of the operation of the brakes are not yet available but the design is radically different from any of the other designs now on the market, being of the shoe type. Practically the full line of Durant bodies is displayed, some fitted with the new type brake and some without.



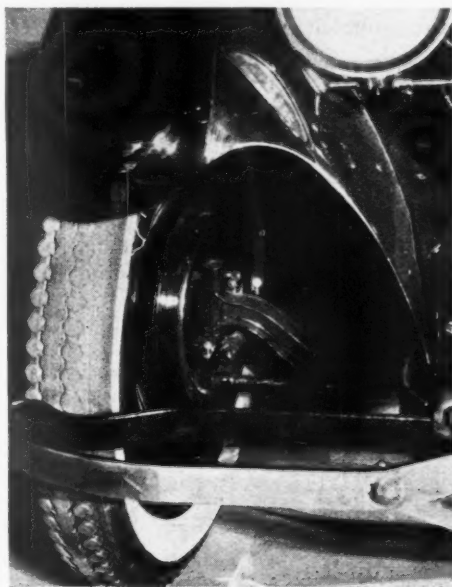
The new Peerless six which is now in production was to have been called Collins six



Marmon four-passenger sedan equipped with balloon tires and four-wheel brakes. This car is being shown at the New York Show

Two New Chandler Sedans

THE Chandler line with the recently added traffic transmission has been augmented by the addition of two sedan models, one a four-door five-passenger and the other a seven-passenger model. Both of these bodies are Fisher products, the price being \$1895 for the five-passenger and \$2095 for the seven-passenger. The chummy sedan is now priced at



Front wheel brake on the Durant car

\$1745 instead of \$1785. A few refinements have been made throughout the power plant and chassis but no changes of any importance have been made in the design. Pistons are Lynite with split skirts. Balloon tires are to be had as extra equipment, the size being 33½x6.2. The extra price with balloon tires is \$100.

New Universals on Gray

GRAY exhibited four new cars, a phaeton, a coupe and a five-passenger sedan described in MOTOR AGE last week, and a five-passenger sport phaeton on the same chassis. There was shown also the Model N phaeton which is the only one of the older models to be continued. The wheelbase and most other features of the Model N remain as heretofore, but the metal universal joints are replaced by fabric joints and a larger (16 in.) fan is fitted. The brakes also have been altered slightly by changing the anchorage point in such a way as to give about a 90 per cent wrap when the car is moving forward.

The Gray five-passenger sport phaeton on the new 104 in. wheelbase chassis lists at \$720.

Pierce-Arrow Changes Slight

FOUR-WHEEL brakes have been adopted as extra equipment on the Pierce-Arrow, the extra charge being \$250. No changes have been made in the chassis design nor in the body designs, with the exception of such minor changes as are necessitated by the installation of the new type brakes.

The Peerless Six

THE center of attraction at the Peerless exhibit is the new Peerless six. This car originally to be known as the Collins six but owing to the recent resignation of Mr. Collins as president of the Peerless company the car is now to be called the Peerless six. Both models will be in full production. Few changes have been made in the eight-cylinder line. Balloon tires are extra equipment on the eight-cylinder at \$100 above the list price for a set of four 35x7½ inch tires.

Building Up Membership Through Form Letters

Putting the Right Kind of Pep and Appeal in the Letters Increased the Membership of the Garage Owners' Association of Greater Kansas City 141 Per Cent

THE Garage Owners' Association of Greater Kansas City has increased its membership 141 per cent, since Jan. 1, 1923. This increase in membership is due to a large extent to Carleton Robb who is the secretary of the Association. He was formerly division manager of the Automobile Club of St. Louis.

Robb was so successful in organizing the whole of southeastern Missouri that it resulted in his being promoted to the Kansas City office of the Club. From the Auto Club he came to the Garage Owners' Association of Greater Kansas City, and proceeded to instill new life into the organization, resulting in the increase in membership.

With the assistance of the legislative committee, he defeated an ordinance introduced in the city council which would have abolished the curb gasoline pump. The gasoline pump ordinance would have prohibited the conduction, installation, and maintenance of the gasoline pump or tank in the streets, alleys, curbs, etc. In introducing the measure, Fred Bellemere of the fire committee, called atten-

tion to the fact that curb pumps were a nuisance, caused congestion in the streets and were a public hazard.

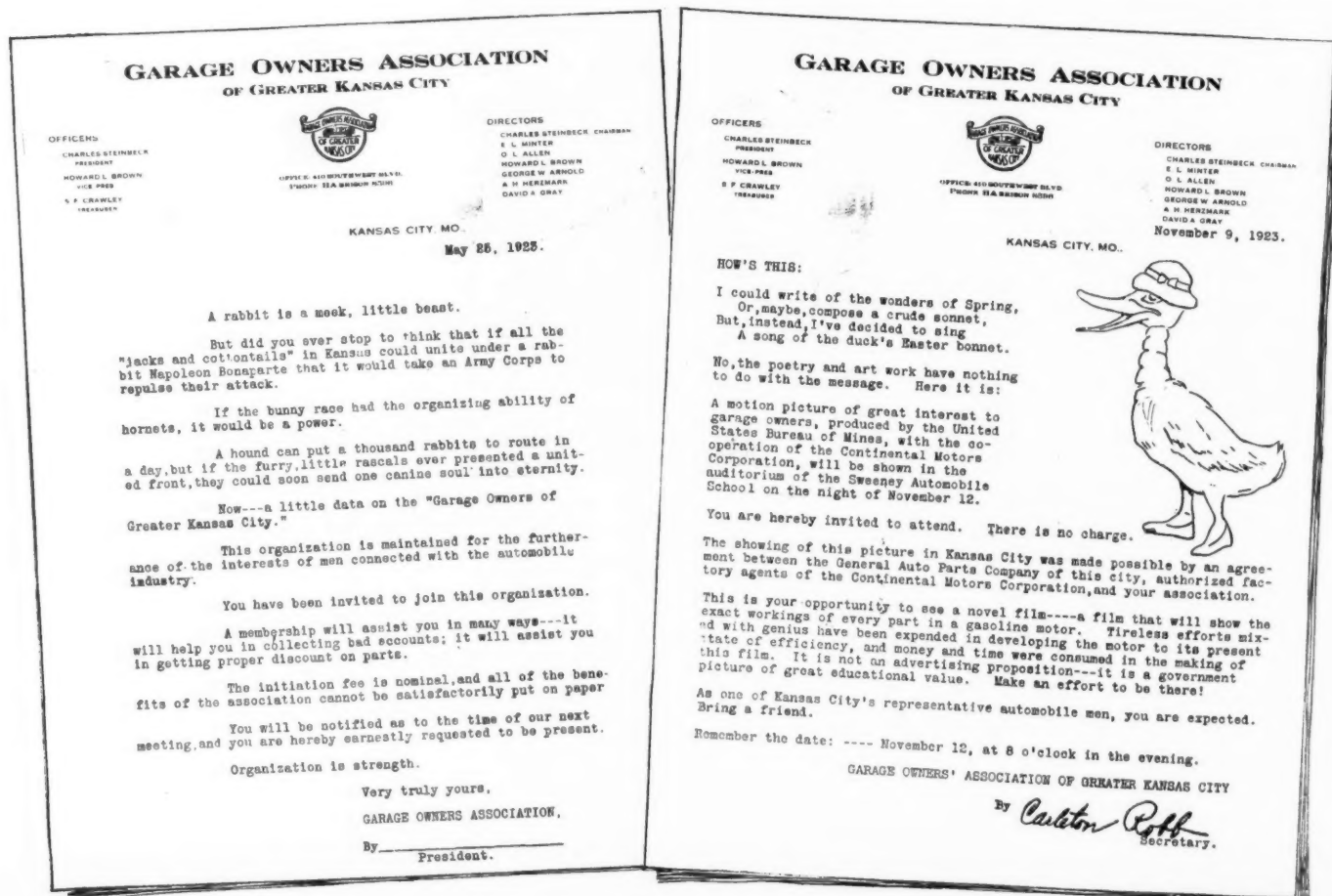
In defeating the measure, Robb brought forth the fact that there was an ordinance which prohibited parking in front of gasoline pumps, and therefore curb pumps did not promote congestion, and also quoted a resolution of the National Board of Fire Underwriters and Fire Protection Association, stating that the best possible means of dispensing gasoline was through a gasoline pump at the curb. This resolution served to kill the idea that the curb pump was a public hazard.

The measure proposed would have been a confiscatory one, declared Robb, because it would have thrown the gasoline and oil business to the larger, so-called trust oil interests, had it been passed. One of the points brought out in one of the hearings was the fact that the city gets a revenue of about \$15,000 or more from curb pump owners and if the proposed ordinance had not been defeated, it would have lost this revenue.

This victory for the Garage Owners' Association served to impress the importance of the potential power of an organization of this kind. Although the Association's membership had increased over 100 per cent, the membership now including 100 members or more, this number was so small that it made the dues burdensome to garage owners, especially the "small fellow."

A reorganization was proposed and is now being effected to broaden the scope of activity and enlarge the membership. Heretofore, only garage owners and operators were accepted as members in the organization, but in the re-organization, memberships will be available to dealers, tire concerns, battery and electrical establishments and to all lines in the automotive industry.

Other cities wondering how this organization was built up, will be interested to know that special form letters were used and mailed to all garage owners and operators. The letters were written by a letter specialty shop which thoroughly understood the situation, and



Two of the letters which did much to win over garage owners to the Kansas City Organization

GARAGE OWNERS ASSOCIATION OF GREATER KANSAS CITY

OFFICERS

CHARLES STEINBECK
PRESIDENT
HOWARD L. BROWN
VICE-PRES.
D. F. CRAWLEY
TREASURER



OFFICE: 410 SOUTHWEST BLVD.
PHONE: HA 8330-8332

DIRECTORS

CHARLES STEINBECK, CHAIRMAN
E. L. WINTER
O. L. ALLEN
HOWARD L. BROWN
GEORGE W. ARNOLD
A. H. HERZMARK
DAVID A. GRAY

KANSAS CITY, MO.

October 4, 1923.

A long trip planned across the uncharted plains---
And one of the prairie schooners loaded with feed for the animals.

Now, if ninety oxen were placed in front of this wagon, but only two were under the yoke, it wouldn't be a fair proposition. Eighty-eight of these cattle would benefit at feeding time, although they had not helped in the labor of the day.

Think this over---and then give the following your undivided attention for a few moments:

The Garage Owners' Association of Greater Kansas City, as an organization, has killed the ordinance proposed for the abolishing of the curb gasoline pump. Most owners of garages will benefit by this victory.

However, all automobile repair and service men are not members of the Garage Owners' Association of Greater Kansas City. As matters now stand, a few are bearing the burden of many.

You are invited to join for your individual good, and the good of the industry.

Here is the question---Can you afford to let those who are members fight all the battles without your assistance?

Think it over---

And write your opinion to---

Carlton Robb
SECRETARY

GARAGE OWNERS ASSOCIATION OF GREATER KANSAS CITY.

410 Southwest Blvd.

Notice the absence of trite expressions in these letters. Once you read the first line, you are pretty sure to follow through to the end of the letters. And, if you owned a garage in Kansas City what's more you probably would join the association

were able to write forceful letters telling the whys and wherefores of the idea they so successfully sold.

It was found on checking up on the proposed members who wished to join the organization, that only about 40 per cent were eligible. This meant a limited organization.

Robb stressed to the automotive men the need of an association that would have legislative influence for the benefit of the organization, and an association which would have the advantages of, Trade Discount, System of Bookkeeping (cooperative), Standardization of Garage Practices, Promotion of Higher Ethics, Data and Engineering Sheets, Assist in Collection of Bad Accounts, Protection from Fraudulent Automotive Manufacturers and Advertisers, and lastly, a program inculcating the idea of Educating the Motorists. This would include showing the motorist how to properly care for and maintain his car, and make him acquainted with the difficulties which confront garage men, and in this way gain his sympathy, confidence and understanding.

Robb has convinced the automotive men that the association as it now stands, is little more than a debating society and that it needs the cooperation of the entire automotive industry. He cited for example the defeat of the curb

pump ordinance which would have cut down the profits for small garages especially, to a very great degree, but through the influence of the organization, this fate was averted.

As a result, the Garage Owners' Asso-

How One Dealer Got Women Christmas Shoppers in His Store

(Remember This for Next Year)

PALMER Grasse knew what all other good merchants know, that to sell a large volume of Christmas gifts it would be necessary to share in the purchases made by women. But he found that it was difficult to get women to visit his accessory store in his garage at Fari-bault, Minn. Many another garage proprietor or accessory merchant has met with the same obstacle.

Here's how Palmer Grasse solved the problem.

He sought and obtained the co-operation of the most popular grocery store in his neighborhood. He then had printed a lot of certificates entitling the bearer to purchase 11 pounds of sugar and one pound of creamery butter for \$1.42 from the grocer named in the certificate, the

ciation has decided to disband Jan. 1, in favor of the Automotive Trades Association of Greater Kansas City, and to affiliate itself with the new organization as the Garage Division of the Automotive Trades Association.

one condition of the bargain being that the certificate first must be signed by Palmer Grasse.

Naturally a lot of women stopped in at his store to get the certificates signed and right then he had an opportunity to show them his Christmas merchandise. He showed the visitors that his merchandise was put up in attractive Christmas packages and that he had holly paper and red and green ribbon for wrapping and tying packages.

To each visitor he gave a neat decorative catalog of "Christmas Ideas" illustrating and describing the various items in his stock which were suitable for Christmas gifts. The catalog had a Christmas cover in color and was filled with suggestions and hints as to the utility of the various automotive gifts. Each article was plainly priced. And on the front cover of the catalog was this: "Keep this booklet. It will help you a lot from now until Christmas." Palmer Grasse got his share of Christmas business and was happier than he had ever been before at the holiday season.



Snarling, frothing at the mouth, clawing at the sack, and howling at intervals.

That's what THE WILDCAT has been doing.

So he had to be turned out of the bag, and here he is right in your hands.

Are you interested in the revision of your constitution by-laws? Haven't you something that you would like to have incorporated in them?

The next meeting:

THURSDAY, OCTOBER 4.

Night 8 o'clock in Room 225 Railway Exchange Building. You know the place---be on hand, it's going to be an interesting evening.

At our last meeting George Arnold was appointed to investigate the possibility of our making a purchase of alcohol for the members at a saving. After a very searching investigation by the secretary it was found that we could easily use 10,400 gallons, but owing to the fact that a majority of our members had already contracted for their supply, it was deemed advisable to drop the matter until next April at which time we could supply our members and get a better price.

Now, be on hand at the next meeting.

There is bound to be something going on that will interest you.

Do you know---

As man to man the best way to kill an organization is to ignore it. The Garage Owners Association wants your support.

Don't disappoint it!

Carlton Robb,

GARAGE OWNERS ASSOCIATION



Bill Fixit's Return

Bill Plays Paul Revere by Telephone and Gives a Lesson on Cutouts

By A. H. PACKER

Previous articles in this series were published Feb. 15, March 8, May 8, May 3, May 31, July 5, July 26, Aug. 16, Sept. 6, Sept. 27, Oct. 18, Nov. 15, Dec. 6 and Dec. 27, 1923

IT was nine at night in Westville. Bill roused himself from his story. Outside the rain had stopped, the wind freshened. Mild weather had persisted but now a change seemed imminent. The mercury had hovered around 40. Now it had dropped to 30. Ten minutes later it was two degrees lower and going down fast. Bill stepped to the porch. The wind was crisp and from the northeast. By morning it would be close to zero. It was time for action.

Betty answered Bill's phone call. "Yes, she would be ready in five minutes." Red was next to be summoned on the wire. Fifteen minutes later Bill and his two faithfuls were hard at it, taking advantage of the lack of telephone business on that blustery night, going over the list of Runwell owners, calling them one by one, and warning them against the coming of the cold wave, and what it might do to cylinders, radiators and run down batteries.

Red and Betty used the two available lines and Bill stood by. His were the doubting Thomases, the hard questions, the cases where diplomacy, or technical knowledge or a judicious blending of the two were most required. Ten fifteen saw the completion of the Runwell list. Next came the others, the owners of the orphan cars, the odds and ends and misfits, whose owners' names were in Bill's files on account of some odd purchase of a tube or patch, for names and addresses went on all Bill's sales slips wherever possible, the making of a prospect file for future use.

The Right Way Wins the Right of Way

Was Bill spending his time to cheat his shop? Bill thought of that. A radiator job or two he might have had by standing by and taking toll of others' hardship, but that was not Bill's way, and Bill's way had been the making of the Fixit business.

Eleven thirty and the job was done. Many an expression of appreciation had greeted the midnight call. Instructions had been given and radiators drained. Batteries that would start the engine had been rated safe but those that would not, had been catalogued as on the danger line, needing a charge. Three days later the cash register tickets showed a radical pick up in business. Primers that had been slow in moving from the shelves, heaters that had started to gather dust had been installed, and the battery charge line was loaded as it had not been for some time. The dividends were coming in.

Nor did the effect of Bill's work stop at the installation of winter equipment. The put off artists with generators out of commission were told what would



"Bill and his two faithfuls were hard at it, going over the list of Runwell owners, calling them one by one and warning them against the coming of the cold wave."

happen if the batteries did not get their regular feeding of juicy currents. Not only would it mean cranking the car all winter, but the purchase of a new battery in the spring and a higher charge for the generator repairs at a time when the shop would be working at its fullest capacity. The regular flat rate charge for generator overhauls with a ten per cent reduction during the winter months, and the assurance of a starter that would, brought the shop business from those cars that came for other things.

Valvy was in his glory. It was fun to him as compared with his old task at carbon and valves, and each new job gave him a chance to learn and to pester the Red Head with some new question.



The little tin match box bothered the Valve Grinding Fiend. It didn't have matches in it, of course, and under the hood it wouldn't do much good, if it did have, but it looked like one, was sometimes on the generator, sometimes on the dash, but Valvy was not sure just why it was there.

"You will remember," said Bill, "that in talking about generators and batteries, we compared the battery to a tank which gave out water to a water motor, while the battery gives out its charge to the starting motor and the other devices on the car. Then just as the tank would need filling, so the battery also needs filling electrically, and

this is the job the generator has to do.

"If we had a pump as shown in Fig. 1 to lift water to the upper tank, which we compare with the battery, we would need some way to keep the water from running back through the pump again, whenever the pump stopped. This is just what would happen in Fig. 1 and the tank would empty almost as fast as it had been filled.

"If we have an arrangement as in Fig. 2, however, the action of the check valve will still let the water go from the lower to the upper tank when the pump operates, but as soon as the water tries to return on stopping the pump, the valve will be forced shut, preventing the upper tank from emptying into the lower one.

"The electrical device that accomplishes this same purpose is called a cutout switch, and its action is to allow the generator to charge the battery, but when the generator stops, and becomes just a network of wire, the action of this same cutout switch is to disconnect the generator from the battery, to prevent this discharge current from flowing. In Fig. 3 is illustrated a generator, the armature of which is supplying current to its own field and also current to charge the battery. We know, however, that its ability to generate depends on its CUTTING lines of force, so that when it stops it generates no voltage, and the battery, therefore, would send current

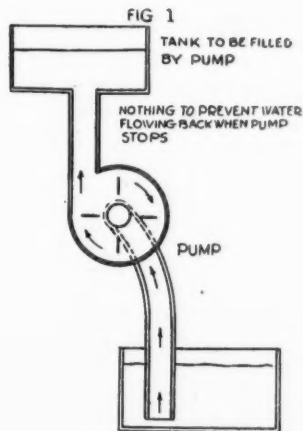


Fig. 1

The need of a cutout in a generator and battery circuit is shown by this water analogy. When the pump stops all the water that has been pumped will flow back again into the lower tank

through both of the generator windings and would soon be discharged. This is like the action of the water in Fig. 1.

"In Fig. 4 is shown a type of cutout switch, the main part of which is an electro magnet, a fine winding on one of its arms being connected to the generator brushes. The electro magnetic effect when strong enough will pull down the piece of soft iron pivoted above it, overcoming the spring which tends to hold the contact points open, and completing the circuit from the generator to the battery. With the proper strength of spring and properly designed coil, this action can be made to occur when the generator has built up to about 7 or 8 volts. As the battery voltage will be in the neighborhood of six the generator voltage will overcome that of the battery and force it to take a charge, the ammeter indicating the current that flows to charge the battery. With but one coil on the cutout switch the action in cutting in is O. K. but the operation in disconnecting the battery when the generator slows down is not so good.

What a Small Boy Learns With a Magnet and a Tack

"We all know that the nearer you put a piece of iron to a magnet, the greater the pull on it. It, therefore, happens that while a certain magnetic pull was necessary to close the cutout switch, it does not take nearly so many ampere turns on the arm of the electro magnet, to keep the points closed. The amperes in the fine winding of the cutout switch are due to the voltage of the generator, which although it drops when slowing down, can not drop much because the cutout keeps it connected to the battery.

"The slowing down of the generator, therefore, drops the charge current to 5 amp., then 2 amp., discharge, then 10 discharge, and perhaps to 20 amp. discharge when the generator comes to a standstill, while the battery, if in fair condition, is able to give out this current to the generator, and still maintain nearly 6 volts at the ends of the fine winding of the cutout coil. This will result in the battery becoming totally discharged before the cutout will let go, as the voltage would have to drop to about four

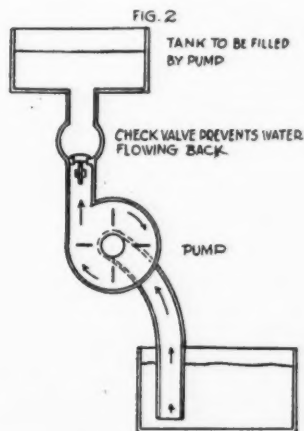


Fig. 2

The action of a cutout in preventing discharge of battery current through a generator is illustrated in this water analogy where a check valve lets the water flow to the upper tank, but prevents its flowing back again when the pump stops

before the spring could overcome the magnetic effect, and pull the points open.

"This action of a cutout switch is remedied by the use of another coil called a series winding, shown on the right leg of the cutout core in Fig. 5, and it will be observed that when charging the battery, the action of this coil is to help the shunt coil hold the points closed, although it has no effect until the shunt coil has first closed the circuit.

"When the generator slows down and

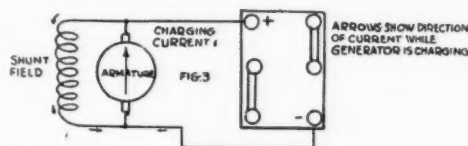


Fig. 3

The generator armature normally sends current to its own field winding and to the battery. With no cutout, the battery would send current through the generator windings when the generator was stopped

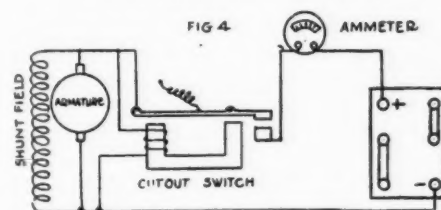


Fig. 4

This simple electro magnet or cutout will close the contacts when the generator voltage has reached a suitable value. It will not, however, cut out properly

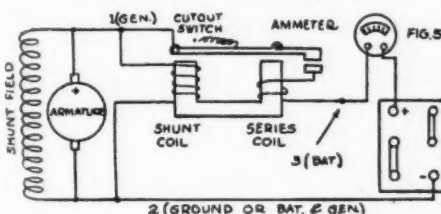


Fig. 5

With a series winding, the holding action on the contacts is greater while charging current flows, and when the current reverses the series action reduces the magnetic effect and lets the contacts open

generates less and less voltage, it reaches a point where the charging current stops, then reverses, and becomes a discharge current drawn from the battery. To flow from the plus side of the battery, through the ammeter to the generator, it must flow back through the series coil of the cutout, in the reverse direction from that of the charging current. This then reverses the magnetic effect of this series coil, which now opposes or bucks the magnetic action of the shunt coil, instead of helping it.

"Let us assume that we have in the shunt coil 1,000 turns carrying .3 amp. giving 300 amp. turns and that this magnetizing action must be reduced to 240 amp. turns before the spring will be able to open the points. Let us further assume that we have 15 turns in the series coil and that the generator has slowed down until the battery discharge is 4 amp. This series bucking effect will then be 4 times 15 or 60 amp. turns which will oppose the action of the shunt winding to such an extent that the points will open.

Cutout Points Open and Do Not Close Again Until Voltage Rises

"At the instant the points open, the shunt coil becomes disconnected from the battery, and the much lower voltage of the generator can not again close them, until the engine speeds up and the voltage of the generator rises above that of the battery.

"With the use of a series coil the tendency of the cutout switch to stay closed is no longer a disadvantage, but an advantage, for the instant the switch arm starts to move, the magnetic pull becomes stronger, and the points go together with a snappy action. Without this characteristic, the points close slowly and also open slowly, drawing an arc, which results in burning of the points. The resultant sticking eventually prevents opening of the contacts, and a discharged battery is the result.

"A well designed cutout switch should close at such a time that there will be a charging current of about 1½ amp. If the point action is slow or the cutout opens while drawing a very heavy discharge current, the points tend to burn. One trouble that may be encountered is, therefore, a burnt condition of the points, which may not prevent the mechanical action of the armature, but may prevent the points making a good electrical connection when they do touch. The remedy is to smooth up the points with a thin file and adjust the cutout so that it does not open with a heavy current flowing. If the switch does open too late, it is due to too weak a spring or to too small an air gap between the pivoted arm and the U-shaped core by which it is attracted. Similarly, failure to close soon enough is due to too strong a spring or to too great an air gap.

See If You Can Match Up the Diagrams With a Cutout in Stock

"The commercial cutout switch as used on the modern automobile generator has three terminals as indicated by the numbered points on the diagram in Fig. 5. No. 1 is usually marked generator. No.

2 may be marked Bat. and Gen. or in grounded systems, the base of the switch may be the No. 2 terminal and may not be marked at all. The third terminal may be marked battery. Defects in the windings are of two kinds, first an open circuit which is most likely to occur in the shunt coil as this is made of fine wire and is easily broken.

"To test for this trouble a 110 volt lamp circuit may be used, and if the test points are touched to terminals that correspond to No. 1 and No. 2 the points should close with a snap. Connected to 8 volts of a battery they should also close with a snappy action, indicating that the shunt coil is O. K.

"The other likely trouble is found in a cutout that has just been installed, and which was not thoroughly tested when built. It is a reversal of the direction of winding of one coil with respect to the other, which does not prevent the points closing but causes the series coil to have the wrong effect. The generator current to battery, therefore, opens the points, causing a vibration and burning action, and when the points should open, the series coil holds them shut, causing the battery to discharge through the generator. This can be corrected by reversing the connections of either coil depending on which is the easier.

The Ignition Switch That Serves As a Cutout

"The type of cutout switch just described is used on most generators for automotive service, although there are other methods of connecting and disconnecting the generator and battery.

"In some Delco machines the action of the ignition switch is made to connect the battery to the generator as well as to the ignition circuits, with one throw of the switch button or handle. Current to the generator then runs it as a motor, a roller clutch action allowing the generator to turn while the engine stands still. As soon as the engine starts, however, the generator is driven by the clutch and its slipping action is discontinued. In this manner the usual cutout is eliminated and the generator is disconnected at the same time that the driver shuts off the ignition. Should the engine stall when the car stops and the driver forgets to shut off the switch, the generator runs again as a motor, and the clicking sound of the clutch serves as a warning that the switch has been left on.

"The way in which a generator charges the battery and then slows down and tries to operate as a motor is not always clearly understood, although this action takes place every time a cutout operates. We have been considering the action of generators where electrical voltage and current were produced by the motion of wires through a magnetic field, and we know that if this produces current today, it will do so tomorrow for the laws of electricity are unchanging. It, therefore, happens that whatever causes a wire to move through a magnetic field is acting to set up a voltage in that wire.

When a Motor Is a Generator

"In considering the action of motors,

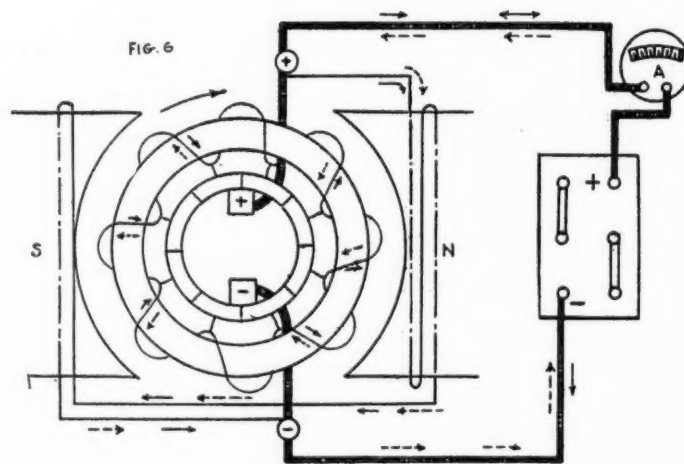


Fig. 6

Solid arrows show direction of currents when the machine is running fast enough to act as a generator. When running slow enough to run as a motor it draws current from the battery as shown by the dotted arrows

we think only of the torque effect of a wire carrying a current when acted upon by a magnetic field, the mutual action being to push the wire across the field, and it is on this principle that motors operate. However, as soon as the wires in the motor armature cause it to revolve, they begin to cut through the lines of force of the magnetic field and, according to our unvarying law, this produces a voltage.

"We then have the seemingly peculiar condition that a motor is a generator at the same time that it is running as a motor. The difference lies in this, however, that when running as a generator, the machine is producing a voltage higher than the battery, thus causing it to take a charge, but when running as a motor it produces a voltage that is less than that of the battery and draws current from it.

"Referring to Fig. 6, let us assume that when the armature turns at the rate of 600 r.p.m. that it generates 6 volts and that the battery voltage is exactly 6 also. Current will flow through the generator field windings as shown by the solid arrows, but the balance of voltage between generator and battery will result in neither a charge nor a discharge current flowing through the ammeter. When the generator is speeded up to about 700 r.p.m. the voltage generated will be about 7, while the battery voltage we will assume is still 6 volts, giving a difference of 1 volt sending current through the battery circuit.

Figures That Show What Current Will Flow

"Dividing the 1 volt by the resistance of the armature, wiring, etc., through which the charging current must pass will give the current which we will assume is 4 amp. Similarly if the generator should slow down to 500 r.p.m. and generate 5 volts, the battery would send 4 amp. discharge current through the machine while motoring. This 5 volt pressure produced when running as a motor is known as back e. m. f. (electric motive force or voltage).

"To see clearly the direction of the

current in both cases, solid arrows have been used for currents flowing when the machine is generating and dotted arrows when running as a motor. We are also considering, of course, that the machine continues to run in a right hand or clockwise direction, which it would continue to do, if driven by or connected to the engine.

"Using the right hand rule, we can point the forefinger from "N" to "S" which is the direction of the flux or lines of force. With the center finger now pointed toward the paper, which is the direction of the current as it passes under the north pole, we have the thumb pointing downward, which is the rotation assumed. Similarly using the left hand rule which is the one for checking motors, we have the forefinger of the left hand pointing from "N" to "S" and the center finger now pointing up from the paper which is the direction of the dotted arrows which show the direction of motoring current. The left thumb now points downward showing that the armature is now trying to run in the same direction that we forced it to run when generating.

One Machine That Does the Work of Two

"The above principle is employed in motor generators, the North East system on Dodge cars being a good example, for the same machine first runs as a motor and cranks the engine, then as the engine speeds up it generates and charges the battery. A cutout is used on these machines, however. Some few years ago, the same general idea was used by the Hupmobile where a Westinghouse motor generator was used without a cutout, the change from motor to generator being due to speed only.

"Referring again to the change of a machine from a motor to a generator let us consider what will happen when we speed up above the point where the generator voltage equals that of the battery. We will consider that the 500 r.p.m. point of the generator occurs at 10 miles per hour of the car, and we will also remember that when the difference in

voltage was 1 volt that a current of 4 a.m.p. flowed. The following table will then illustrate what happens:

Miles per hour of Car	Gen. Voltage	Bat. Voltage	Difference	Amperes
10	5	6	-1	-4
12	6	6	0	0
14	7	6	1	4
16	8	6	2	8
18	9	6	3	12
20	10	6	4	16

22 11 6 5 20
30 15 6 9 36

"The above figures cannot be considered as an exact representation of the conditions existing but if the generator voltage is considered as the internal voltage developed, it does show in a general way that the charging current to battery increases very rapidly as the speed of the car increases, and becomes excessive above 20 m. p. h.

"The current flowing through the

armature to the battery also has an effect of weakening the generator output, but the action of a plain shunt generator with no means of controlling the output at high speed, has characteristics as indicated in the table, and would burn up both the battery and its own windings by the excessive charging current it would produce. For this reason all automobile generators must have some means of controlling the generator output as the speed of the car varies.

Four Wheel Brakes in England

From MOTOR TRADER (A Dealer Publication)

IT is no secret that the retail trade is rather puzzled today about the front-wheel brake question. Peeping behind the scenes we can find some puzzlement also in the ranks of the manufacturers. Circumstances naturally bring about a big cleavage of opinion, the side in possession of front-wheel brake cars having a different view from that side which relies upon the more conventional braking system.

With the technical battle which is being fought between the two schools of brake design things must take their course. The ultimate choice of the public is also an unknown quantity, though here the action of the trader may have some effect. But let not the trader make the mistake that he can keep the public off having something which it feels it must have. Likewise let him not egg on the public too eagerly.

Possibly the trader who has a well-boomed front-wheel brake model in his repertoire feels very happy about his good luck, and he may think that the manufacturer who supplies him with this has scored heavily over his rivals. On the other hand, the trader with no front-wheel braked car to sell may feel depressed, and he may be a little incensed at the manufacturer for not providing for the new development.

Whatever the position may be as regards brakes, it is obvious that both classes of manufacturers will try to make the best of it. And here lies the danger. The front-wheel brake possessors will be tempted to launch forth on a great boosting campaign. The two-wheel brakers will be forced to respond with a more circumspect defence in which they justify their action in not making or selling cars with four-wheel brakes.

Were the whole motor trade as prosperous as it should be, then there would be little harm in the most vigorous slanging match on brake systems. After all, the salesman constantly yearns for "talking points," and the pros of the front-wheel brake give him a new chapter of good talk; whilst even the case against the front-wheel brake is not to be despised by the salesman weary of old platitudes.

All this being so, it might seem that the trade must allow matters to take their course, and let flamboyant "boost-

ing" of four-wheel brakes greet the public with no less lurid warnings against the dangers, the difficulties, and uncertainties of the new system. Even the legal aspect of the case may be dragged in.

But in view of the parlous condition of trade I feel that the situation demands a more statesmanlike attitude from the industry as a whole. Without in any way interfering with freedom of trade, or denying to the enterprising manufacturer and his agent the fruit of their enterprise, I might urge that the long view be taken for the common good. Any attempt to stampede the public to clamour for front-wheel brakes on all cars next year will defeat its own ends.

Suppose that we could put up one composite opinion for the trade as a whole on this subject just for the present juncture, what shape might it take? Here is an attempt at it:—

The evolution of the motor car must go on. There can be no stopping it. But the general level of efficiency is now so high that radical changes must not be expected by the public suddenly. A manufacturer and his agent owe so much to the reputation of their cars that even the most promising invention must be subjected to exhaustive tests before it can be adopted finally. On modern large scale production mistakes are very costly. The standard of improvement becomes higher each year. Trying experiments on the public is no longer a wise course.

The matter of front-wheel brakes has been studied by every designer worthy of the name. In theory it is desirable to have the most powerful brakes possible, but in practice the braking power of a car must be taken in relation to the general design, to the weight, and the speed of the car, and the requirements of user. Generally speaking, the faster and heavier the car, and the higher its average speed, the greater braking power required.

In no case is it wise to have a brake system which is not absolutely reliable under the conditions which govern the public usage of cars. There are certain technical problems connected with each new form of front-wheel brake design which have yet to stand the test of time.

In fine, let all remember that as one swallow does not make a summer, four wheel brakes do not make a motor car. The case for the front-wheel brakes must not be overstated. Neither must it be under-stated. Above all, the trade as a whole does not want a fiasco in any new

mechanical development. Let us be sure that we have only thoroughly reliable front-wheel brakes to offer; and let the firms who have not yet perfected their plans show that their present braking system is better than ever. Admit, candidly, that front-wheel brakes must come; but let no manufacturer give them to the public until he is fully satisfied with his design.

Breaks 'Em Up and Sells the Pieces

OUT in the rain, somewhere, the voice of a woman singing. What kind of a town could this be, this Dixon town in Illinois, that such conditions could exist?

Oppression of the poor and needy. No, not that, a radio. And I followed the voice. A loud speaker, a real one, not the scratchy kind, for it brought the tones clear as crystal, from the Drake at Chicago to the Chevrolet salesroom of B. F. Downing, and half a block away the voice was heard, calling attention to the window display where a fine new car with all the trimmings was inviting all to come and try it.

Christmas has come and gone, but some day another will come, another opportunity to make the window a living invitation, and I talked to Downing and found he had been at it but three years, and started on fifteen hundred or so and back of that had a lot of experience in—three guesses and you'd miss it—selling groceries, that's what.

He made good at the groceries, and he's doing the same with the cars. His banker, one of those supposed to be "hard boiled tribe" that have not much—do you get that?—advised him to go into the automobile business and then backed him up. There should be more bankers like that.

So Downing did it. Started out and sold cars—and bought 'em, for most of those who wanted to buy new ones wanted to sell old ones. But Downing stopped it there. He didn't peddle the old ones and give them a chance to come back again or give him some negative advertising, he wrecked them and is still doing it.

Generator, starter, ignition, battery, tires. All the fast moving parts that a wrecking concern gets good money for, Downing takes off, and his used car department is a row of shelves about ten feet long. What's left of the chassis he sells for ten or fifteen dollars, knows where he stands, can use his shop space for productive work, likes the plan and is going to stick to it.



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The First 1924 Show

THE New York show is always regarded as an indication as to whether the public is still sufficiently interested in new motor car styles to pay to see the best advertisement of this industry. Saturday's attendance at this show apparently answers this question in the affirmative.

The crowd started in the big building, nine miles from the heart of the New York amusement and exhibition center, as soon as transportation conditions would permit and the steady stream of visitors kept up all of the afternoon and evening. The attendance exceeded that of the first day of last year, despite the handicap of cold weather and location.

The pessimistic prophecies in all regards were defeated. There were numerous new models to be seen, quite a number of new bodies of established lines and some novelties that were worth seeing in the accessory exhibits. Altogether it was a very satisfactory show and the visitors apparently were satisfied after their tour of the one big floor. The newspapers of the city were enthusiastic over the appearance of the show and car advertising appeared to be up to standards of previous years.

Larger shows than this have been given in Paris and London, but never an equal of this one on a floor unmarked by building posts. This show is undoubtedly

the greatest automotive spectacle of all shows.

And most important of all is the fact that the public is willing to pay to see the show. This would seem to indicate a great show season for 1924, for the people of New York are much like the people of other sections of the country.



Let's make 1924 another record year.



Associations

THE thought will not dawn that the automobile dealer is not yet fully appreciative of what associations can do for him and what organization will do for him if he will become a part of the organization and help in organization work.

There are some very active city and county organizations and few of the members of these active associations have any thought of quitting their membership. But in localities where associations are not active, the members are rather indifferent to the organizations. In communities where there are no organizations, usually the dealers regard associations as merely another means of spending money.

Some day we believe that a realization of the need of local, state and national organization work is going to grasp the greater number of reputable automobile dealers and the support of the organization is going then to become a part of the day's work. Then, and then only, will the value of organization be entirely demonstrated.

As long as it is necessary to sell each dealer, each year, on why he should pay dues to his local, state and national association, just so long are we going to have a multiplicity of effort and waste of time and money. Under these conditions, the dealer is paying three collectors for collecting dues from him when, in his own interest, he should be paying dues only once and that to his local association. By virtue of paying these dues, he should become a member of the state and national associations and these interlocked and systematized associations should be working automatically for the interest of all dealers, putting effort on the particular things that need attention, instead of collecting dues.

This is the theory but it does not work. Twenty local associations are active in Illinois and it is self evident that these twenty associations cannot support a proper state association that will work for all of the dealers of the state, so the Illinois association must seek individual memberships and the staff must collect these dues. It is the same in other states.

A lack of organization is responsible for many of the unjust laws that are now operative against the motor vehicle owner and consequently against the automotive industry. Anything that reflects against the owner makes it just that much more difficult to sell vehicles.

Also there are laws which operate against the automotive merchant, such as special tax for doing business, special reports of merchandise sold and recently there became operative a law in Alabama which forces the dealer to pay \$1 to have the titles passed on every car he sells, new or old. This is strictly a revenue measure and does not provide for a proper inspection of these titles. Aggressive organization is needed to clear up such situations.

If the dealers of the country would get interested in the organization movement, bring about a proper

scheme of organization and make this organization effective, then doubtless they would get the help they so often ask from manufacturers. There already exists the framework of this organization in the local, state and national organizations. No real organization man connected with any of these associations would object to a reorganization on a sane basis.

The present trouble is that all of the men connected with these organizations have tried to organize on the proper basis, only to see the local organizations fail in their part. Such an organization can come only when a fair percentage of the dealers of the country realize that in unity there is strength and that there is special work for each division of a well knit, three story organization to do.

Every dealer in the country believes that conditions are not what they should be and every dealer should know that if he will drop his selfish thoughts and co-operate with his fellow dealers, that he can remedy many of these conditions. In view of past experiences, it is too much to hope that this understanding will come about in the near future, but now is the best time for dealers to begin to think about their own interests.



Selling transportation pays profits.



Traffic

A SPECIAL committee of the Chamber of Commerce of St. Louis has made a constructive and definite recommendation to the municipal government. The suggestion is that the city build an adequate number of proper sized garages for day storage of cars and that street parking be limited to the minimum.

This report from business men on behalf of business is based on the great loss to traffic through the streets because the car owner is occupying space that is required for the proper conduct of business.

St. Louis has for a number of years been several steps ahead of other cities in traffic and safety work, due to a considerable extent to the dealer association there and the prominence of automotive men in public affairs.

We suggest that some of the groping traffic experts in other cities and those studying traffic on behalf of organizations make a study of some things that have been done in St. Louis.



Do you fill well your owners' automotive needs?



Tires

A SMALL manufacturer of tires who operates in the middle west recently gave a rather conclusive answer as to one thing that is the matter with the tire industry.

This manufacturer said that he was turning out 700 tires a day and that he had 3500 dealer accounts on his books. His production in five days equals the number of dealer accounts on his books, so the conclusion is drawn that his dealers sell an average of one tire every five days.

We do not know exactly about the proportion of tire sizes made by this manufacturer, but most factories like his run heavily to Ford sizes and we presume that this

factor does. If that is true, the sale must average less than \$10 per dealer for five days.

We do not know that there are many factories that are running on such an uneconomical merchandising plan as this but we do know the answer if the manufacturers do not get a better basis of merchandising.



Get your shop equipped for spring service.



Unselfishness in Business

IT seems that in Cincinnati they are rather a neighborly sort of people, even in business. Recently Harry T. Gardner, manager of the Automobile Dealers' Association, put this interesting bit in his news letter, which he sends to his members and such other business institutions as may want it:

When you need something but don't buy it you pay for it just the same.

Exhibit A:—If you needed an overcoat because of cold, inclement weather and parsimoniously refrained from buying it—if you went home with a snivelling nose and goose pimples all over as big as doorknobs and the next day the doctor said "Pneumonia"—if you were ill for one month and convalescent for another — mister, you would more than pay for that overcoat.

When a merchant actually needs coupes for his travelling salesmen and doesn't buy them he more than pays for the cars through loss of orders that could have been secured.

Imagine his surprise a few days later to see his chief line spread across a five column advertisement for the principal electric company of that city with full credit given as to its authorship. And the advertisement, while it chiefly boosted electric appliances, gave credit by inference to motor car selling.

Why should business be entirely selfish and afraid to mention another branch of business? It is that spirit that makes this incident unusual.



What are you doing about traffic congestion?



Orphan Cars

RECENTLY the Milwaukee Journal did some research among the families of that city to see what sort of merchandise was used. Automobiles were included in the list of subjects and a canvass of the families—as distinct from business houses brought out some interesting facts. Among these facts was the importance of the orphan car.

It developed that slightly more than 5 per cent of the cars owned by the Milwaukee families were orphan cars from a factory standpoint. How many were orphaned from a dealer standpoint, cannot be computed from the records at hand.

This research indicates a total of 122,694 families in greater Milwaukee and 33.98 per cent of these families or 41,691, own motor cars and that of these families, 840 families own two cars and 413 families own three or more.

1923 Registration 15,281,295

2,916,918 Is Gained Over 1922, or 23.6 Per Cent

Pennsylvania Records Largest Gain With 234,888 More Than Last Year

NEW YORK, Jan. 8.—Passenger car and truck registrations in the United States totalled 15,281,295 on Dec. 31, 1923. This represents an increase of 2,916,918 over 1922, a gain of 23.6 per cent. New York still leads the states in total number of vehicles with 1,214,090. It is followed in order by California, Ohio and Pennsylvania, each of which has passed the million mark for the first time.

Pennsylvania recorded the largest gain with 234,888 more vehicles than last year, although increases of more than 200,000 were made by California, Ohio and New York.

Motorcycle registrations dropped from 193,495 to 171,568.

Fees collected from motor vehicle owners by the various states amounted to \$189,919,289. The enormous total reached by motor vehicle registration surpassed by nearly 1,000,000 the most optimistic estimates previously made.

California Dealers Look for Greater Year in '24 Than '23

SAN FRANCISCO, Calif., Jan. 8.—With a good profit from business for the last half of 1923 in their pockets, and with sales going strong throughout December, dealers in automobiles, motor trucks, accessories, and tires, as well as the repair shop operators, look forward to 1924 as holding every prospect of greater business, with better collections, than any year of the previous history of the industry in northern California. The wave of demand for both new and used cars which began rather timidly in June, and rose steadily to the end of the year, shows no signs of abatement. The demand for used cars, which, as previously reported in this correspondence, began early in October and extended throughout December, was reflected in the increased demand for new cars in November and December. Men who had used cars which they had determined to keep for another year, sold them at a good price to private purchasers, and took the cash so received and immediately put it down as first payment on a new car. Thus more new cars were sold than would have been had not the demand for used cars so suddenly increased.

The rather unexpected sale by the deciduous fruit growers' associations of the bulk of their hold-over crop also put considerably more money into circulation, and many men, especially in the rural districts, who had decided to do without a new car, went into town as

soon as they received their checks from their cooperative associations and paid cash for a new car. Reductions in prices late in the year also helped these sales, especially in cars whose prices were brought down to about \$1,000 by these reductions.

Old Time Vehicles In Endurance Contest

NEW YORK, Jan. 7.—As a sort of curtain raiser to the national show students of the Stevens Institute of Technology of Hoboken, took part in a so-called reliability run from the West Twenty-third street ferry to the Bronx Armory. There were five old cars in the contest which had been overhauled and put in running order by the students themselves—a 1900 de Dion, 1899 Panhard, 1900 C. G. V., 1901 Darracq and 1903 Ford.

As an advertisement for the show, the run was a success and at the end the reliability honors were awarded to the veteran Panhard, a car with a dignified history which once belonged to "Lucky" Baldwin, who paid \$15,000 for it.

DINNER FOR W. C. DURANT

NEWARK, N. J., Jan. 7.—The Durant Activities Association of which John J. Bergen, district representative of Durant Motors, is president, gave a dinner in honor of W. C. Durant at the Robert Treat Hotel, which was attended by more than 400 of the co-workers and friends of the head of the big organization. Carroll Downes acted as toastmaster, while the speakers included Ex-Governor Stokes, William E. Holler of the Durant executive staff; J. H. Newmark, Durant advertising manager; Dr. E. J. Cattell of Philadelphia; Bartley Doyle of the Poor Richard Club of Philadelphia and Congressman Gray.

MARTIN-PARRY PLANS

YORK, Pa., Jan. 7.—The Martin-Parry Corp. held a three-day convention of branch and district managers last week at which plans for 1924 were outlined and discussed. At this convention it was announced that the company will offer for this year a complete line of all-steel dump bodies in addition to the regular 38 Standard models.

REO INCREASES CAPITAL

LANSING, Mich., Jan. 5.—Capitalization of Reo Motor Car Co. has been increased to \$20,000,000 with the filing of amended articles of incorporation as authorized by the recent stockholders' meeting. The increase of \$5,000,000 will be taken care of by transfer from surplus to capital.

Reorganization of Roamer Motor Car Co. Is Under Way

Executive Committee in Charge— G. P. Wigginton Slated for Presi- dency—Plant Closed for Inventory

KALAMAZOO, Mich., Jan. 5.—Plans for the complete re-organization and re-financing of the Roamer Motor Car Co. are now being worked out and will be completed by Feb. 1, and made effective by that date.

Among the important steps to be taken will be the election of George P. Wigginton, president of the Kalamazoo Loose Leaf Binder Co., as president of the Roamer Motor Car Co. Mr. Wigginton has tentatively accepted the post and will devote himself to determining a definite policy for the company's activities in the future.

The selection of Mr. Wigginton to the post of president means the retirement of A. C. Barley as executive head of the company. With his retirement Mr. Barley has also transferred all his holdings to the board of directors, who are empowered to use them at their discretion. The financial affairs of the concern are now in the hands of an executive committee of three directors, George P. Wigginton, Charles G. Bard and Charles A. Blaney.

The steps taken to date meet with the approval of creditors of the company, who have been consulted on all matters pertaining to the proposed re-organization. Arrangements are also being perfected with Grand Rapids investment bankers to take over the treasury stock of the company, which will be sold to provide necessary working capital. Minor details of this agreement are being worked out at this time.

"The plant of the Roamer Motor Car Co. is now down for inventory," said Mr. Wigginton. "We plan to start again as soon as that task is completed. A system will be worked out whereby the concern will be able to operate at continuous production and on a profitable basis. There will be an entirely new organization in charge, though it is quite impossible at this time to indicate any changes that are to be made."

About three months ago a syndicate of twenty financiers and businessmen of Kalamazoo subscribed for \$100,000 stock in the concern. They have indicated their intentions of standing by the plans for the proposed re-organization, realizing that any defection at this time might prove fatal.

ONE RECEIVER FOR LONG FIRMS

BOSTON, Jan. 7.—Following a second hearing on the R. H. Long Motors Co. financial affairs at a meeting of creditors in the Federal District Court Judge Lowell named Guy Murchie receiver.

Production Again On Upward Trend

Waukesha Motor Co. Acquires Ricardo Cylinder Head Patents

Will Grant Licenses for Manufacture of This Design in America and All Other Countries

WAUKESHA, Wis., Jan. 5.—The Waukesha Motor Co., of this city, has purchased the patents for the Ricardo cylinder head, designed to create turbulence of the mixture, which, it is claimed, produces more power and higher efficiency. The company will grant licenses for the manufacture of this design of cylinder head and combustion chamber not only for America but for all other countries. At the present time several of the largest American producers are using this type of cylinder head.

Negotiations were completed in England in October, when Henry L. Horning, general manager of the Waukesha company, with legal counsel, made a hurried trip across. It had been known for several years that Mr. Horning had been working very closely with Harry Ricardo, internal combustion expert of Shoreham, England, on turbulence and combustion chamber design and the Waukesha laboratory has been carrying out extensive research and development work along this line.

Engineers will recall that Mr. Ricardo addressed the Society of Automotive Engineers on this subject at the annual meeting two years ago. For years he has been considered a leading authority on internal combustion engine work and the use of his design of engines in the British tanks during the war focused attention on him.

GOULD MANAGES FRANKLIN

SYRACUSE, N. Y., Jan. 8.—J. W. DuB. Gould has been appointed general manager of the Franklin Automobile Co., a newly created position which will relieve H. H. Franklin, president of the company, of many of the duties which heretofore have had his personal atten-

Production for 1923 Compared With 1922

NEW YORK, Jan. 8.—The monthly record of motor car production for 1923, which was more than 4,000,000 vehicles, compared with that of 1922, was as follows, the figures for December, 1923, being subject to revision:

	1923	1922
Jan.	243,539	91,272
Feb.	276,934	122,521
March	355,930	172,984
April	382,695	219,864
May	394,088	256,559
June	378,507	289,351
July	327,993	247,132
Aug.	345,292	274,184
Sept.	327,549	207,156
Oct.	365,189	239,361
Nov.	312,594	237,391
Dec.	300,000	228,364

Total 4,000,320 2,586,049

Passenger car and truck production segregated by months for the two years was as follows:

	1923	1922
	Cars	Trucks
Jan.	81,696	9,576
Feb.	109,171	13,359
Mar.	152,962	20,022
Apr.	197,224	22,640
May	232,462	24,097
June	263,053	26,298
July	225,086	22,046
Aug.	249,492	24,692
Sept.	187,694	19,462
Oct.	217,566	21,795
Nov.	215,352	21,949
Dec.	208,010	20,354

Total 2,333,768 246,281

	1923	1922
	Cars	Trucks
Jan.	223,819	19,720
Feb.	254,773	22,161
Mar.	319,770	35,260
Apr.	344,639	38,056
May	350,410	43,678
June	337,362	41,145
July	297,330	30,663
Aug.	314,373	30,829
Sept.	298,911	28,638
Oct.	335,023	30,166
Nov.	284,680	27,914
Dec.	271,000	29,000

Total 3,632,000 377,230

tion. Mr. Gould has for a number of years acted as consultant for the Franklin company, having had offices in New York City.

Factories Busy as New Year Holds Out Bright Prospect

Active Demand for Motor Vehicles Continues—Effort Made to Stock Cars for Spring

NEW YORK, Jan. 7.—Following the usual period of inventory taking and plant readjustment in preparation for renewed activities with the turn of the year, automobile producing plants are swinging back toward capacity operation. January output will be in excess of the total for December, which, despite the closing of some plants for a brief time and the interruption of activities of others because of the holidays, reported an output approximating 300,000.

December was a surprising month, showing only a slight falling off in its output totals from November and rounding out a year with more than 4,000,000 cars and trucks produced. This was a new record in the production history of the industry. Throughout the year, starting with March, schedules were maintained at an exceptionally high rate, no month going below the 300,000 mark.

Some Cars Are Stocked

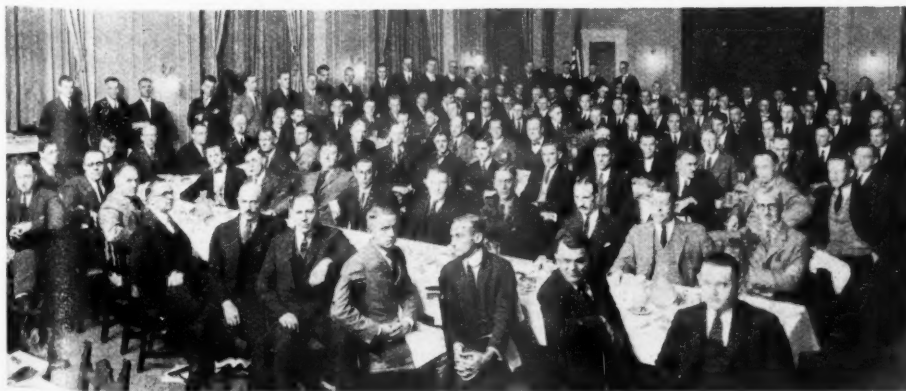
Some of last month's output has been shipped to dealers or warehoused to meet spring demand and forestall any possible shortage when the heaviest demand of the year comes. Stocks will be permitted to accumulate in greater volume from now on, although in many sections of the country continued demand has prevented any stocking of cars up to this time. December sales generally were far ahead of a year ago and showed less than the normal decline.

Conditions as they affect future automobile sales are reported to be excellent, and manufacturers are basing their production schedules for the first quarter, at least, on this outlook. While buyers in the past year have come principally from cities, it is felt that farm communities will absorb a greater percentage of cars this year and will offer a better outlet for factory production than in the past. This increased buying on the part of the farmer is expected to be felt by truck producers as well, resulting in augmenting production by that branch of the industry.

300 MILES OF NEW ROAD

BALTIMORE, Md., Jan. 7.—With 300 miles of road improved in Maryland during 1923 by the Maryland State Roads Commission, the state now has a total of 2,350 miles of paved or gravel roads in the State system. The improvements in 1923 were made at an average cost of \$16,800 per mile. Nearly five miles of streets in Baltimore were paved by the commission at a cost of \$573,300.

Oldsmobile Service Managers in Annual Banquet at Detroit in December



News of the Show

New York, January 7.

As a curtain raiser to the show the "motor rodeo" dinner of the National Automobile Chamber of Commerce, held at the Plaza Friday night, proved most interesting, and thoroughly demonstrated to the guests, editors of general magazines and special writers, the great work the industry is doing in helping solve the great problems of the day, city planning, traffic congestion, parking, automobile fatalities and in advancing the good roads cause.

Presided over by Roy D. Chapin, chairman of the board of the Hudson Motor Car Co. and also chairman of the N. A. C. C.'s Highways Committee, the industry also was represented by A. H. Swayne, vice-president of General Motors; A. R. Erskine, president of the Studebaker Corp.; E. S. Jordan, president of the Jordan Motor Car Co.; Alvan Macauley, president of the Packard Motor Car Co., A. J. Brosseau of Mack Trucks, Inc., and George M. Graham, vice president of the Chandler Motor Car Co.

The chief speaker of the evening was Thomas H. MacDonald, head of the United States Bureau of Public Roads, who declared that the crowning event of the past year in the matter of highway improvement was the progress made in the Federal Aid system. He declared that while there was evidence of general discontent over taxation and a demand for lower taxes, that so far as the money spent in road development is concerned that even if Federal and State aid on road building was stopped that it would not reduce taxes any.

Alfred Reeves, general manager of the National Automobile Chamber of Commerce, started the discussion with the topic, "Will They Walk?" which had to do with the well-known saturation point. He quoted statistics without end, and declared that dealers generally feel that they will sell as many cars in 1924 as they did last year.

CHEVROLET OUTPUT 483,432

Official figures on Chevrolet production for the year were given as 483,432 by Colin C. Campbell, general sales manager. Of this total Mr. Campbell said about 35 to 36 per cent were closed cars, a percentage which would have been higher had closed body facilities permitted. Large increases in closed body sales will be made during the coming year with the completion of body plants and additions which the company now has under way. Beginning with March 1, Chevrolet will go on a production schedule of 3,000 cars daily, Mr. Campbell said.

FIELDS IS MAXWELL SALES MANAGER

The appointment of Joseph E. Fields as general sales manager of Maxwell Motor Corp. and its associates, the Chalmers and Chrysler companies, was made

known at the opening of the New York show. Mr. Fields succeeds A. E. Barker who died Thursday of the preceding week and whose funeral was held in Detroit on the day of the show opening. For some time past Mr. Fields has been associated with Maxwell, having under his immediate care the general sales and service work of the Chalmers company.

FORD EXPOSITION

Taking advantage of the Bronx Armory show the Ford power equipment exposition is now being held in conjunction with the display of the Ford Motor Co. in the Ford building at Broadway and Fifty-fourth street. It will continue to Feb. 2.

BUICK TO SPEND \$11,000,000

The Buick Motor Co. will spend \$11,000,000 in new buildings, additions and equipment for its main plant in Flint and its subsidiary plant in Detroit. President H. H. Bassett announced upon his arrival at the show. This expansion will enable the company to jump its daily production from 1,000 to 1,200 cars, and enable it to reach its estimated 1924 production of from 235,000 to 250,000.

In addition to this \$11,000,000 the company also is spending vast sums in providing additional facilities for Buick branches in various parts of the country. Notable among these are entirely new service buildings in New York City, Indianapolis, Pittsburgh, and Jacksonville, Fla. The Jacksonville branch building is designed to serve tourists to Florida who drive Buick cars, thus giving them the same prompt and intimate factory attention as that enjoyed in the larger cities.

MARMON MEN MEET

A sales conference of Marmon dealers in the Eastern division was held at the Hotel Empire, presided over by S. S. To-back, head of the New York branch. This was in the nature of a second edition of the convention recently held at the factory and is probably the first of several sectional meetings. Talks were made by all Marmon executives who are in the city attending the show.

LEXINGTON PROGRESSES

Progress is reported in the affairs of the Lexington Motor Co., now being operated by a receiver. With the continued cooperation of the creditors it is expected that the receivership will be lifted within the next few months and the company placed on a firm basis.

\$335 TAXI BILL TO SHOW

Vance Smith of the Homer McKee Advertising Co., of Indianapolis, and Harry Lasher, a well-known advertising man, came to the New York show in a taxicab, making what is claimed to be the longest taxicab trip on record. They left In-

dianapolis in a Premier taxicab, carrying a message from Mayor Shanks of Indianapolis to Mayor Hylan of New York, arriving Saturday, after having covered more than 1,000 miles. The taximeter showed \$335 charges, exclusive of the driver's tip of \$40. The actual running time was about 38 hours at an average speed of 25 miles an hour.

\$100,000 CLUB ENTERTAINED

President John N. Willys featured his prize salesmen at the banquet of the Willys-Overland Co. at the Biltmore tonight, when he introduced the go-getters who had qualified for membership in the \$100,000 Club in the eastern district as a result of their sales efforts last year. Eligibility consists of being able to sell a net volume of \$100,000 worth of Overland and Willys-Knight cars in one year. At the Chicago show all members of the \$100,000 Club hailing from the middle west and west will be entertained.

Executives of the Rollin Motor Car Co. are happy because of the first driveaway from the factory last week. In the short time the company has been operating, it has secured \$25,000,000 worth of business at an expense of but \$50,000 for advertising, while the demands for its product has surpassed all expectations. It is claimed that the books show orders for more than 30,000 cars for 1924, while the factory capacity is 20,000.

The Indiana Automotive Manufacturers' Association came to the show in a special train, 150 strong. Officers of the Association in the party included: President, Will H. Brown, Nordyke & Marmon Co.; vice-presidents, L. E. Porter, S. F. Bowser Co.; J. I. Farley, Auburn Motor Co., B. F. Chandler, Ross Gear & Tool Co.; secretary, Lon R. Smith; treasurer, George T. Bryant, Robert I. Hassler Co.

Stutz Motor Car Co. in the past year has increased its dealer strength 300 per cent and is planning to add as many dealers to its list in 1924 as it did last year. Asking the dealers for only a minimum estimate of their needs, the company feels it ought to turn out more than 5,000 cars this year.

N. H. Van Sicklen, vice president and general manager of the Apperson Brothers Automobile Co. and Edgar Apperson are not at the show, both having gone on a western trip. Mr. Van Sicklen has gone direct to the Pacific Coast and Mr. Apperson, after a month in Phoenix, will join him.

Hayden Eames, general manager of the Haynes Automobile Co., announces the successful completion of a three weeks' campaign to sell a million dollar bond issue for the payment of creditors and to insure the continued operation of the company.

Price Changes in Several Lines Made Known at Opening of New York Show

New Chrysler Lists at \$1335 for Five-Passenger Touring Car—
Lexington and Auburn Announce Increases—Cleveland
and Apperson Reduced

NEW YORK, Jan. 7.—Prices on the new Speedway Six series were set at a meeting held at the New York home of Eugene V. R. Thayer, chairman of the board, by executives of the Stutz Motor Car Co. of America.

Hydraulic four-wheel brakes and balloon tires are optional equipment on the Speedway Six. There is an extra charge of \$75 for four-wheel brakes, \$110 for balloon tires and \$185 for both. On the Special Six balloon tires are optional at \$200 above list.

The new list is as follows:

SPEEDWAY SIX	
	Standard Price
5-pass. Sportster	\$2650
7-pass. Tourster	2685
5-pass. Sportbrohm	3350
7-pass. Suburban	3500
7-pass. Berline	3500
Chassis	2350

SPECIAL SIX	
3-pass. Roadster	1995
5-pass. Phaeton	1995
5-pass. Tourabout	2265
5-pass. Sedan	2550
Chassis	1795

SPEEDWAY FOUR	
6-pass. Touring	2640
3-pass. Roadster	2450
4-pass. Coupe	2990
3-pass. Bearcat	2765
Sportcoup	3250

LEXINGTON PRICES INCREASED

Lexington Motor Co., Connerville, Ind., announces price increases ranging from \$50 to \$100 on its Minute Man Six models. Old and new prices are as follows:

	Old Price	New Price
2-pass. roadster.....	\$1895	\$1895
5-pass. phaeton.....	1795	1895
7-pass. phaeton.....	1895	1995
5-pass. Lark, sport phaeton	2145	2145
5-pass. California top.....	2095	2195
7-pass. California top.....	2195	2295
5-pass. royal coach.....	2245	2295
5-pass. brougham.....	2345	2395
5-pass. sedan.....	2645	2695

Optional extras are priced as follows: Five wire wheels, \$100; five special wire wheels and five balloon tires, \$175; six special wire wheels and six balloon tires on Lark sport model, \$90.

CLEVELAND REDUCES PRICES

Price reductions are announced by the Cleveland Automobile Co. In addition to a De Luze phaeton has been added and the sport model discontinued. No change has been made in the phaeton which remains at \$1,045.

The new list is as follows:

	Old Price	New Price
5-pass. two-door sedan.....	\$1365	\$1295
Special two-door sedan.....	1465	1395
Four-door sedan	1545	1395
Special four-door sedan.....	1645	1495

APPERSON REDUCED

Apperson Brothers Automobile Co. announced price reductions, made possible through the elimination of equipment used last year which selling experience showed was not in demand with the buying public. In addition balloon tires and four-wheeled mechanical brakes are optional on the six-cylinder line.

The new list is as follows:

Six-Cylinder		
	Old Price	New Price
5-pass. phaeton	\$1535	\$1475
Sedan	2200	2155
Sport model (new).....		1660
Eight-Cylinder		
5-pass. phaeton	\$2820	\$2485
7-pass. phaeton	2900	2485
Sedan	3750	3385

AUBURN ADVANCES PRICES

Price advances are announced by the Auburn Automobile Co. as a result of additional equipment. The advances, however, do not apply to all models.

The new list is as follows:

6-43 Series		
	Old Price	New Price
5-pass. Standard phaeton.....	\$1095	\$1095
5-pass. Special phae. (new)		1295
Sport model	1325	1365
5-pass. sedan.....	1495	1695
5-pass. English coach (new)		1845

6-63 Series		
	Old Price	New Price
5-pass. Special phaeton.....	\$1595	\$1695
Sport model.....	1850	1935
Four-door brougham	2145	2245
5-7-pass. sedan.....	2345	2445

WILLS SAINTE CLAIRE PRICES

Prices on the new Wills Sainte Claire models on the 127 in. wheelbase are as follows:

Roadster	\$2875
5-pass. phaeton.....	2875
7-pass. phaeton.....	2875
Coupe 4-pass.....	3675
Sedan 5-pass.....	3775
Brougham 4-door.....	3800
Sedan 7-pass.....	3800

(All above models have four wheel hydraulic brakes and 32x6 Balloon tires.)

5-pass. phaeton.....	\$2675
7-pass. phaeton.....	2675

Prices on 121 in. wheelbase models are:

5-pass. phaeton.....	\$2475
Brougham 2-door.....	3375
Sedan 5-pass.....	3475
Imperial sedan.....	3575

CHRYSLER PRICES ANNOUNCED

Prices of the new Chrysler cars were announced at the show, as follows:

5-pass. touring.....	\$1335
Phaeton	1395
Roadster	1525
Sedan	1625
Brougham	1795
Imperial sedan.....	1895

Disc wheels and an extra rim are optional for \$25 extra.

Durant Brings Out 6-Cylinder Eagle at \$820 for Phaeton

New Model Has 4-Wheel Brakes as
Standard Equipment—Sedan
Price Not Announced

NEW YORK, Jan. 7.—W. C. Durant sprang another addition to his line of motor cars in the shape of the Eagle Six, the phaeton model of which will sell at \$820, at Flint. This car has a wheelbase of 115 ins. and has four-wheel brakes as standard equipment.

Beside the five passenger phaeton, which is on exhibition at the Flint salesrooms on Broadway, but which is not at the show, there will be a sedan model, the price of which is not announced. Except for the Oldsmobile, the Eagle is the lowest priced six on the market. It comes between the Star and Durant and resembles both in certain respects. It is fitted with an engine of Continental manufacture, has a bore of 3 1/8 ins. and a stroke of 4 1/2 ins.

Dealers and Car Owners Are Interested in Legislation

BALTIMORE, Md., Jan. 6.—Much legislation in regard to motor vehicle operation and in which the dealers as well as the car owners will be interested, is to be acted upon at the present session of the Maryland General Assembly. The body is expected to be ready to consider the measures within the next few weeks.

One measure to be introduced will provide for licensing only automobiles on which the municipal taxes have been paid in Baltimore.

There is considerable talk of offering a bill which would force automobile owners who are not responsible financially to give bond or take out insurance to guarantee that others whom they may injure can collect damages.

F. T. CHASE JOINS ZINKE CO.

CHICAGO, Jan. 8.—Frank T. Chase has joined the Zinke Company, 1323 Michigan avenue, Chicago, sales representatives for six automotive manufacturers, as vice president in charge of merchandising. Mr. Chase was formerly vice president and general manager of the Frank Mossberg Co., Attleboro, Mass.

1,302,000 KLAXONS IN 1923

NEWARK, N. J., Jan. 7.—The Klaxon Co. reports a production of 1,302,000 horns in 1923. The largest single day's production and shipment totaled 11,200 horns and the best month saw 165,048 made and shipped. A production of 2,000,000 is predicted for 1924.

\$1,000,000 HAYNES BONDS SOLD

KOKOMO, Ind., Jan. 8.—A three weeks' campaign resulted in the sale of \$1,000,000 in bonds of the Haynes Automobile Co. to residents of Kokomo, according to a report by the Haynes company.

Atlanta Holiday Business Is Best in Industry's History

**Both Cars and Equipment Sell Well
But the Latter Is Especially
Brisk**

ATLANTA, Ga., Jan. 7.—Holiday business among the Atlanta dealers was probably the best during the season just passed in the history of the industry, including both cars and equipment, with the latter trade particularly brisk during all of December. There proved to be an unprecedented demand for closed cars this season, not only in Atlanta but among dealers throughout the whole Southeast, with the result that most of the dealers were able to dispose of nearly all the closed cars they could secure. It is interesting to note that the principal closed car demand lately has been in the comparatively small towns and cities, quite a few of the smaller dealers being unable to deliver more than 75 per cent of the closed cars they had sold prior to Christmas.

Over the entire season it proved to be substantially an accessory Christmas, with the volume of this business by far the best it had ever been before during a holiday season, according to Atlanta jobbers.

Briefly reviewing the year as a whole, most dealers and distributors seem to agree that the industry in the Southeast enjoyed one of the most prosperous years in its history, in spite of the fact that the percentage of used car "trade-ins" has reached a point that makes it one of the serious problems the industry has to contend with. Dealers in both large and small cities and towns have enjoyed good business nearly all year, and principally since cotton prices began to advance in the late summer. Because of this cotton prosperity the future is the brightest it has been in years, with most dealers looking for an even greater year during 1924.

In accessory, tire and equipment sales, Atlanta jobbers state that 1923 was undoubtedly the best year the industry has ever enjoyed, and that there is every prospect that 1924 will be better. Business booked by salesmen the last two months for early 1924 trade was approximately 40 to 50 per cent better than at this time a year ago.

BUILDING HELPS CAR SALES

CHICAGO, Jan. 7.—Unprecedented activity in building construction in Chicago and suburbs during 1923 was an important factor in maintaining automobile sales at a high level, especially in the low and medium price fields, and all indications point to still greater building activity this year. Building permits taken out in 1923 were for structures valued at \$340,000,000, the highest figure on record for one year. Permits in 1922, the previous high year, were for buildings valued at \$227,000,000.

DRILL PRICES REDUCED

TOWSON, Md., Jan. 7.—Price reductions of approximately 12 per cent have been announced by Black & Decker Mfg. Co. on heavy duty portable electric drills of the following sizes: seven-eighth inch, five-eighth inch, nine-sixteenth inch, one-half inch and three-eighth inch. An equal reduction was made on four, five and six inch portable electric grinders. These reductions became effective Dec. 29 and were second reductions made during the year.

Supreme Court Knocks Out "Deadly Weapon" Charges

CHICAGO, Jan. 5.—A decision by the Supreme Court of Illinois in the first case of the kind ever presented to it makes clear the law of the State as to the liability of an automobile driver who injures a person, for prosecution on a charge of assault with a deadly weapon. The case was that of the State vs. A. Anderson and two lower courts had held the defendant guilty. The Supreme Court reversed the verdict and declared in its opinion:

"An injury caused by negligence not amounting to a reckless, willful and wanton disregard of consequences to others cannot be made the basis of a criminal action." The defendant was represented in the hearing before the Supreme Court by Joseph E. Braun of the legal department of the Chicago Motor Club.

WILLYS PREDICTS 4,000,000 MORE

TOLEDO, Jan. 5.—Basing his estimate on the business outlook, John N. Willys, president of the Willys-Overland Co., predicts that "there is ample justification for the preparations that the automobile industry is making for the building of 4,000,000 cars during 1924." Mr. Willys also forecasts new records in all lines of business, which, he declares, is more truly normal than at any time since the war.

Mr. Willys' production plans call for 30,000 cars a month during the first quarter and he says that dealer contracts on hand make it safe for him to expect that the production of the first quarter will be continued throughout the year.

SHOWS SANCTIONED BY A. E. A.

CHICAGO, Jan. 7.—In a bulletin the Automotive Equipment Association calls attention to the fact that the only automobile shows at which it sanctions exhibition by its members are those at New York, Boston, Chicago and Winnipeg—sanction also being granted for the National Hardware Association Show. As to aid that may be extended in other shows the Association has rendered the following interpretation: "That furnishing of an expert salesman or salesmen, or display boards only to assist the jobbers at shows would not be considered in violation of the rule pertaining to same, it being understood, however, that all other expenses shall be borne by the jobber."

Louisville Automobile Sales Club Is Formed by Salesmen

**To Promote Friendly Feeling of
Workers for Competing Firms,
Is Object**

LOUISVILLE, Ky., Jan. 7.—Automobile salesmen of Louisville have formed the Louisville Automobile Sales Club. Officers elected were: Honorary president, Ira S. Barnett, of the Triangle Motors Co., one of the first men to engage in the automobile business in Louisville, being pioneer agent for the Oldsmobile in 1902; president, O. G. Pickrell, of the Prince Wells Co.; vice president, Lee S. Read, of the Hannah-Miles Co.; secretary-treasurer, George T. Holmes, secretary of the Louisville Automobile Dealers' Association. In addition to the president and vice president, the executive committee is composed of R. E. Brennan, of the Monarch Auto Co.; A. C. Hughes, of the Prince Wells Co.; P. E. Leach, of the Hite D. Bowman Co.; E. Carey, of the United Motor Corp., and H. C. Brachey, of the Klein Motor Co.

The club has the sanction of the dealers' association, but it will be separate. The club will elect its own officers and manage its own affairs.

The purpose of the organization is to create a feeling of cordial relationship between salesmen of competing firms; to raise the standard of sales personnel in the industry locally, and to improve generally the business of selling automobiles wherein the active selling unit of the trade is concerned. Monthly meetings will be held at which problems of the salesman will be discussed from all angles by the salesmen themselves.

The movement to organize the club originated from the desire on the part of a number of the older salesmen in Louisville who feel that they owe it to themselves and to their employers to improve themselves and improve the conditions that surround their profession.

Well informed business men and capable speakers in other lines as well as that of the automobile business will be invited to address the organization from time to time.

MOTOR CONGRESS PLANS

WASHINGTON, Jan. 5.—Details of the International Motor Transport Congress to be held in Detroit in May, were explained last week to Secretary of State Hughes by John N. Willys, Chairman of the Foreign Trade Committee of the National Automobile Chamber of Commerce, and George F. Bauer, Secretary of the Committee.

Delegates from practically every foreign country in the world will be present at the opening of the Congress and the invitations, which are now being made up, it is expected, will be sent out through the Department of State. Following the close of the Detroit meeting the delegates will be brought to Washington and presented to the President and other public officials.

N. A. C. C. Estimate Places December Production 300,000

**Total for 12 Months of 1923 Is
4,009,320 Which May Be
Increased Later**

NEW YORK, Jan. 7.—Estimates made by the National Automobile Chamber of Commerce, based on shipping returns, place December production at approximately 300,000 cars and trucks, a decrease of 4 per cent over the preceding month.

This gives a total for the 12 months of 1923 of 4,009,320, which may be increased a few thousands when the figures are revised. Compared with the total output of 1922 of 2,586,049, this is an increase of approximately 50 per cent, the biggest jump in the history of the industry. In dollars and cents the wholesale value of 1923's production of cars and trucks amounts to \$2,510,885,000. The wholesale value of the cars is \$2,243,500,000 and of the trucks, \$257,500,000.

This in itself is a new record, beating the previous best mark of \$2,232,927,628 in 1920, when 2,205,197 motor vehicles were turned out. This is evidence backing up the claim of the N. A. C. C. that the automobile dollar is worth 111 cents and well illustrates the substantial price reductions the industry has made in the last three years. In 1921 the wholesale valuation was \$1,260,000 and in 1922 \$1,789,638,365.

The passenger car production in 1923 was approximately 3,632,090, which exceeds by a big margin the predictions of a year ago as to the combined outputs of cars and trucks for the year just ended. When some of the optimists guessed 3,000,000 as the 1923 total they were laughed at, but the final returns show them to have been most conservative. In 1922 the passenger car output numbered 1,691,368.

Trucks had a good year with an estimated production of 377,230 as compared with 252,668 in 1922.

There was an increase of 5 per cent in closed cars, it being estimated that 1,235,000 were built in 1923 as compared with 715,028 in the previous year. This is 35 per cent of the total passenger car production.

BIG KANSAS CITY SHOW PLANNED

KANSAS CITY, Jan. 7.—The Kansas City Motor and Accessory Show, to be held Feb. 9 to 16 in the American Royal Building, will be a comprehensive automotive exposition. Entries have been made not only in the passenger car, truck and accessory departments, but also in departments for tractors, for motor buses and for taxicabs. There will also be a radio show. A feature of the show this year will be the many exhibits by good roads associations of the West and Southwest, to be displayed incidental to the meetings of these bodies. State and national highway departments will have exhibits and representatives.

A. E. BARKER DIES

DETROIT, Jan. 3.—Arthur E. Barker, vice president and in charge of sales of Maxwell and Chalmers cars, died this morning from peritonitis, having been stricken last Friday night. Mr. Barker was in the industry for 15 years. Previous to his Maxwell connection he was a prominent sales executive of Dodge Brothers and prior to becoming identified with the automobile world, he was in charge of the telephone industry in Michigan. Mr. Barker was 48 years of age and is survived by a widow and one son, the latter a student at Andover.

Nash Grants More Discount to Dealers on Cars Jan. 1

KENOSHA, Wis., Jan. 7.—An additional discount has been granted by the Nash Motors Co. to its dealers on Nash four-cylinder cars, effective Jan. 1. This discount was made retroactive as to all four-cylinder cars, new and unused, in the dealers' hands on Jan. 1 which were shipped to them between July 1 and Dec. 31, 1923.

In its letter to dealers the Nash company makes it plain that this discount is in addition to the regular billing discount and any contingent quantity discounts earned by volume of business. Commenting on this action, C. W. Nash, president of the company, declared his company looks forward to the biggest year in its history and is doing everything in its power to assure its dealers a sound and prosperous business in 1924.

DEALERS INCREASE ALLOTMENTS

SEATTLE, Wash., Jan. 7.—Nineteen twenty-three was a considerably better year for Puget Sound dealers than the previous year and distributors of standard cars have made plans for increasing allotments.

Activity in the lumber industry and improved business conditions generally, marred only by farmers' conservatism in buying, indicate more money available for cars this year. Dealers in higher priced cars feel optimistic. Truck demand will be good.

The used car is serious despite unusual selling methods. One firm offers 500 gallons of gasoline or \$80 bonus on the purchase of a used car of a certain price and 1000 gallons on higher priced used cars.

GAS EXPLOSION CAUSES FIRE

GROTON, S. D., Jan. 5.—Explosion of gasoline being drained from the tank of an automobile started a fire which caused \$10,000 damage to the garage and its contents of the Groton Auto and Tractor Co. Twelve cars in the garage were damaged. No one could explain how the gasoline was ignited.

RUBBER MEN'S BANQUET

CHICAGO, Jan. 8.—The annual banquet of the Midwest Rubber Manufacturers' Association will be held Jan. 29 at Hotel Morrison, Chicago. A business meeting and luncheon will be held at noon of the same day.

Columbia Develops Used Car Sales Plan for 1924 Dealers

**Norman Taylor Adds Advertising
and Service Sales Campaign
to Build Confidence**

DETROIT, Jan. 8.—Columbia Motors Co. has worked out a sales plan for 1924, which it will use cooperatively with its dealers and prospective dealers, in which it places the elimination of used car losses as pre-eminent for dealer success. To eradicate used car losses an advertising and sales service is offered by Norman I. Taylor, advertising counsel, which, while prepared especially for Columbia dealers, will be offered the retail trade generally through his own organization, Taylor Selling Service.

The feature of the used car service is a series of newspaper and direct by mail copy, designed to build up public confidence in the dealer handling the used car. The service covers a six months' period and is divided into five classifications to meet the needs of dealers in varying size communities. The cost of the service is dependent on the size of the communities in which it is offered. Only one dealer in each community will have the privilege of the service.

Aside from the used car service, the principal feature of the Columbia dealer help plan is the assumption by the factory of advertising costs. Regular copy to appear four times monthly will be prepared and space paid for by the company. Dealers will have the help of the Columbia plan in locating prospects and in addition to the newspaper campaign, these will be circularized by mail from the factory.

Each month the factory will send to each dealer's banker or financial associates, personal letters to keep them informed on dealer possibilities under the Columbia franchise and sales plans. Each month dealers will receive from the factory complete sets of show window display and advertising material. Salesmen in each dealer's establishment will receive personal assistance from the factory each week in his sales work, this supplementing the dealer's own educational efforts.

New Financial Arrangement

Columbia is also offering dealers under the 1924 plan, a financial arrangement that will provide for both floor and retail requirements. Frequent contact with the factory organization will be maintained through meetings held in the different territories. The company will also issue beginning with January, a company publication titled "The Communicator," which will go to all dealers and their sales staffs, and in which will be contained ideas, suggestions, plans, ways, means and methods for moving merchandise and increasing profit. The magazine is intended to keep everyone in the Columbia organization well posted on every helpful development.

Move On to Revive Georgia State Dealers' Association

W. L. Mathers and Others Urge Organization to Combat Proposed Destructive Legislation

ATLANTA, Ga., Jan. 8.—The Atlanta Automobile Association has given a life membership to William L. Mathers, former president of the Georgia Automotive Dealers' Association, for his work during 1923 as chairman of the Association's legislative committee, and has renamed him as chairman of the same committee during the coming year.

As a result Mr. Mathers has inaugurated a campaign to revive the state association that has been practically a dead issue for the past two years or more, in the opinion that state dealers should cooperate with the Atlanta dealers in legislative work at least, due to the fact that the whole industry in the state benefits from the work of this committee. For instance, a number of measures were defeated at the special session held recently by the Georgia Legislature, and also at the regular summer session in 1923, that would have proven a genuine burden to the automobile industry if the measures had been enacted into laws.

In the event the state association cannot be revived as an existing and operating organization, Mr. Mathers will endeavor to form a state legislative committee to include representatives of various dealers in the principal cities of Georgia to assist the committee of the Atlanta association during the present year. The present plan is to have one member for this committee from each congressional district, dealers throughout the state to help the Atlanta organization finance the work of the general committee.

Used Cars Jamming Sales Outlets in Birmingham

BIRMINGHAM, Ala., Jan. 5.—Retail automotive sales in Birmingham and most of Alabama have been holding up to the high standard of the early fall months insofar as new cars are concerned, but used cars are causing the dealers throughout this section more concern every day. The one big problem of the retail automotive dealers of this section of the country as spring approaches is the used car. Given a way to dispose of the cars they take in as part payment on sales nothing could prevent the sales records from being set at a higher mark next spring than ever before in the history of the automotive business in this section.

General conditions point to excellent business during the coming spring. Alabama as a whole is about on the same basis as they were last year as regards income. Debts have been reduced and most of its citizens are actually in better shape than they were last year. This does not apply to the Birmingham District, however, where conditions are not

so good as last year, but are now showing signs of improvement. On the whole, however, the only thing to keep the dealers of this section from making new sales records is lack of an outlet for the used cars they take in trade. With a general improvement in industrial employment this may be provided.

A. J. Banta Is Appointed Rickenbacker Sales Manager

DETROIT, Jan. 8.—A. J. Banta, one of the well known figures of the industry since its inception, has been named general sales manager of Rickenbacker Motor Car Co., a position which has been vacant since the resignation of W. C. Drumpleman to become Rickenbacker distributor in Cleveland. Mr. Banta will be in charge of all sales work, both domestic and foreign, working under E. V. Rickenbacker, vice president in charge of sales.

Recently Mr. Banta has been vice president and general manager of Clydesdale Motor Truck Co., Clyde, Ohio. Before that he was identified with the Maxwell organization during the regime of Walter Flanders, being assistant to Mr. Flanders. Later he was president of the Maxwell Sales Co., of Chicago, in which position he served for several years. For twelve years previously he was an executive of the Locomobile Co. of America, terminating his work with that company as manager of all branches west of Ohio.

Announcement is made also of the appointment of R. L. Bearden as export manager of Rickenbacker, and simultaneously the launching of an extensive campaign for foreign business. An export campaign has been worked out in which the Rollin Motors Co. of Cleveland is participating and under which the products of both companies will be pushed, either individually, or in smaller cities, as a composite line.

MICHIGAN DEALERS MEET JAN. 23

DETROIT, Jan. 8.—Michigan Automotive Trade Association will hold its fourth annual meeting Jan. 23, which is during the twenty-third annual Detroit automobile show. The day will be observed as Michigan Day at the show and every dealer attending the convention will be the guest of the Detroit Automotive Dealers' Association at the show.

The business meeting of the organization will be held in the morning, an educational session in the afternoon, and the dinner in the evening. All sessions will be at the Hotel Statler.

NEW APPLEBY MART STARTS

CEDAR RAPIDS, Ia., Jan. 7.—The Cedar Rapids Motomart, operated under the Appleby plan, has been opened under the management of W. J. Carmody, at 207 A avenue. The Cedar Rapids plant is the first Appleby station in Iowa, but others will be established at Waterloo, Ft. Dodge and other cities in eastern parts of the state.

Goodyear Profits for 1923 Reported Near \$10,000,000

Earnings, However, Were Made in First Six Months Before Period of Price Reductions

AKRON, O., Jan. 7.—In spite of low prices the Goodyear Tire and Rubber Co. is unofficially reported to have earned in the neighborhood of \$10,000,000 for the year which closed Dec. 31, which is greater than the earnings of the company any year except 1917, 1918 and 1919.

These earnings, according to the same report were shown during the first half of the year before prices were reduced while the earnings of any one month during the first half of the year were greater than those of the entire half of the second year.

These earnings would cover all charges and some profit on the preferred stock, following large reduction in funded debt since reorganization, indicating that when prices again become normal the company will have an excellent opportunity of recovering from the financial blow of the business depression.

But for the reduced prices the volume of business done during the past year would have exceeded in dollars any done previously with the exception of possibly one year because the unit sales of the company were the greatest in the history of Goodyear.

As it is any increase over the sales of 1922 when they amounted to \$102,904,000 will come as a surprise to the men closest to the rubber industry. The peak year in the company's history was recorded in 1920 when sales amounted to \$205,000,000. In 1919 sales amounted to \$169,000,000 while in 1917 they passed the \$100,000,000 mark for the first time by going to \$111,000,000.

Up until 1917 the earnings of the company were below \$8,000,000 but in 1917 they went to \$14,000,000 and in 1919 were reported at \$23,000,000.

Automobiles Rank Third in Value of U. S. Exports

WASHINGTON, Jan. 5.—An analysis of the foreign trade of the United States during the first nine months of 1923 shows that automobiles ranked third in the value of exports, being out ranked only by cotton and coal, in order.

Gasoline exports for the nine months period, ranked fourth in value, exports amounting to 11 per cent over those for the first nine months of last year, while the quantity exported exceeded by 128 per cent, the amount exported from January to September inclusive in 1922.

TO FIGHT GRADE CROSSINGS

WASHINGTON, Jan. 5.—Elimination of all motor highway-railroad grade crossings will be the outstanding feature of the national 1924 program of the National Motorists Association, according to a statement just issued from their national headquarters here.

33 Per Cent Increase in Iowa Sales Recorded in 1923

Dealers Found Selling Costs Somewhat Higher, But Report Satisfactory Profits

DES MOINES, Ia., Jan. 5.—According to figures prepared by S. P. Whiting, secretary of the motor trades bureau of the chamber of commerce, Des Moines and Polk county dealers sold approximately 33 per cent more cars in 1923 than in 1922. Truck sales show an even larger increase. Comparisons of figures reveal that very nearly 40 per cent more trucks were sold in 1923. In all, Polk county shows a registration of 6844 new passenger cars in 1923 as compared with a registration of 5113 in 1922.

It is felt that the city business of 1923 was somewhat better than that obtained by dealers in smaller communities. City dealers report increases ranging from 15 to 50 per cent, but the new car registration shows a fair average, about 33 per cent. In spite of the increased volume, many Des Moines distributors claim that their profits during 1923 were not much greater than during 1922. More sales effort, more advertising and other sales promotion work combined to increase selling costs. Coupled with this increased sales expense was losses from handling used cars.

Altogether, however, dealers and distributors are optimistic concerning the 1924 outlook. Distributors believe that city sales levels will be maintained and that the dealers in smaller centers will find business much better. The used car problem will probably be taken up in some united manner by Des Moines dealers. Although the N. A. D. A. plan was tentatively accepted by Des Moines dealers some time ago, no active steps toward putting the plan in operation have been taken. At all events several leading dealers have announced a firm intention of inaugurating "used car plans" of their own. One or two dealers are already refusing all trade deals unless the used car can be obtained for its actual resale worth.

Men prominent in automotive activities of the state believe that next year will show even better business and that it will be possible to cut down sales expense to some extent. Commenting on this, Dean Schooler, president of the Iowa Automotive Merchants' Association, stated: "Business during 1923 was fair, showing a good increase over that of the preceding year. City buying was, perhaps, stronger than the demand in the country but this year should show a substantial increase in the smaller trade centers."

According to A. J. Knapp, secretary of the Iowa Automotive Merchants' Association, the association has shown not only a healthy gain in membership but has become financially self-supporting and able to offer an even greater service to its membership. Some 85,000 new motor vehicles were registered in Iowa during the first eleven months of 1923, according

to figures compiled by Secretary Knapp. This, he points out, is conclusive evidence that Iowa automotive business has not suffered during the past year and that the dealer may look forward to healthy business conditions during the coming year.

May 1 Is Closing Date for Indianapolis Race Entries

INDIANAPOLIS, Jan. 7.—Entry blanks for the 1924 international sweepstakes 500-mile automobile race, which will be held here May 30, are being distributed by the Indianapolis Motor Speedway Co. This will be the twelfth event in this famous automobile racing classic.

This year, as last, entries will be limited to cars of not more than 122 cu. in. engines, with minimum weight of 1400 pounds for cars of 122 cu. in. and 1200 for cars of 91 cu. in. The entry list will close at midnight May 1 and the management declares that there will be no exception to this rule.

A safety rule which will be put in force this year for the first time will require that any driver who relieves another must have driven that car or an exact duplicate in practice. It is expected that all cars entered this year will be single-seaters.

NEW ASCOT SPEEDWAY

LOS ANGELES, Jan. 5.—Old Ascot Speedway, for years the one and only motor speedway on the Pacific Coast, dismantled by sub-dividers of the ground upon which it stood in 1919, is being recreated by George R. Bentel, who owned and managed the historic oval over which "Eddie" Rickenbacker, Teddy Tetzlaff, Barney Oldfield, Eddie Pullen, Earl Cooper, "Wild Bob" Burman, Eddie O'Donnell, Ralph DePalma, Louis Disbrow, Eddie Hearne, Tommy Milton, Louis Chevrolet, Joe Boyer and a host of other old-timers participated in thrilling speed duels.

The new Ascot is being built across the city from the old site but otherwise the architects and builders have stuck close to the original lines of the old motor speedway.

A huge amusement park and fair grounds is being constructed around the track proper which, when completed, will be the scene of weekly racing programs.

TO HANDLE LINCOLNS ONLY

COLUMBUS, O., Jan. 5.—The H. B. Coen Co., now operating at 1288 North High Street, Ford and Lincoln distributor in Columbus, has leased the old Lostro headquarters at 327 East Broad Street. When the Coen concern takes over the new home it will handle Lincoln cars exclusively, and will conduct the only Lincoln service station in the city. Other Ford and Lincoln dealers in Columbus will continue to handle Lincoln cars, but a tentative agreement has been reached by them to send all Lincoln service work to the Coen headquarters, it became known recently.

Minneapolis Dealers Form Used Car Statistical Bureau

Central Office Will Distribute Information to Aid in Determining Fair Allowances

MINNEAPOLIS, Jan. 5.—The Minneapolis Automobile Trade Association at its meeting Dec. 28 agreed to a plan to take care of the used car problem and to facilitate handling of such automobiles.

A Minneapolis Statistical Bureau is being organized to operate purely for statistical purposes, gathering information that will assist members to arrive at the actual values of these cars on the market, and for their proper handling.

In addition to three officers there are to be four directors and weekly meetings are to take place to be attended by representatives of all the constituents.

Metropolitan dealers will be assessed about \$50 a month dues and subdealers or associate members \$10. An office will be maintained in charge of a competent secretary who will adjust any misunderstandings that may arise between dealers.

Base prices from which any dealer may estimate the probable market value of cars offered him in trade-ins or acquired otherwise will be ascertained by the bureau directors, or an appraisal committee appointed by them to be made up of six used car managers and sales managers. At any time the base price of any car may be learned, from which may be deducted a percentage for overhead and sales expense, and for reconditioning. With a maximum appraisal available from the secretary's office the dealer may determine at once what the used car will be worth to him. The dealer will learn also whether the same car has been appraised previously by some other member.

OAKLAND SALES TRIPLE

DETROIT, Jan. 5.—Oakland Motor Car Co. reports sales in the last quarter of the year three times those in the same quarter of the previous year and within 300 of the record last quarter of 1919. November and December sales in 1923 were the highest for those months the company has had. To produce 75,000 cars in the calendar year 1924 the company will go on a monthly production of 8,000 beginning Feb. 1.

No surplus of cars has been accumulated for spring owing to heavy demand since the new line was announced, the factory declares. Increases in the dealer organization have also been responsible for increased sales. No indication of a lull in business is seen by C. J. Nephler, general sales manager.

GAS TAX INCREASED TO 2 CENTS

WILMINGTON, Del., Jan. 5.—In accordance with an act passed at the last session of the Legislature, the state gasoline tax was advanced Jan. 1 from one cent to two cents a gallon. The proceeds are for highway improvements.

Continental Motors Doubles Output With 275,000 Engines

Company Reports Net Profits of \$2,180,453 in Its Last Fiscal Year

DETROIT, Jan. 5.—Continental Motors Corp. reports profits from operations for the year ended Oct. 31, 1923, of \$3,886,195.62, which after deduction for interest charges and depreciation leaves a net profit before tax provision of \$2,180,453.25. Substantial and healthy progress has been made during the year, President R. W. Judson declares, only part of which is reflected in the statement of earnings.

Organization of manufacturing facilities for larger quantity production of low priced passenger car engines absorbed a major part of the corporation's earnings, Mr. Judson reports. This program of expansion, now definitely completed, has been amply justified by the increasing demand of the public for low-priced transportation. During the year 237,000 engines were manufactured and sold—more than twice the output in any previous year. For the current fiscal year production is estimated at 300,000 engines of all types, using 75 per cent of present plant equipment. Current and subsequent earnings should therefore be substantially increased, Mr. Judson declares.

Research laboratories, designing and engineering departments have been used to greater extent by customers than ever before. Important improvements and refinements in design have been developed. The entire range in sizes and capacities of four and six cylinder engine types are now included in the product. Sales of parts increased 43 per cent over the previous year and 107 parts stations now handle distribution for the company.

Deduction from earnings of \$1,208,195.15 for depreciation of plants and equipment appears large, declares Mr. Judson, but is in line with the conservative policy of the company to maintain facilities at high efficiency for low cost production. Net plant investment was increased \$1,540,700.82, principally at Muskegon, to provide latest equipment for more economical production.

Addition of \$671,076.40 to inventory is in balance with company's extended production facilities. Notes and accounts payable aggregate \$1,359,759.34 more than last year, due principally to retirement of preferred stock and increase in liquid assets. Full provision has been made for Federal taxes for this and previous years, says Mr. Judson, and all differences with the Government have been satisfactorily concluded.

On Jan. 15, 1923, the entire outstanding amount of preferred stock, \$2,015,500 was retired. On April 1, 1923, \$750,000 in principal amount of serial gold notes were paid on maturity. Interest charges on preferred stock have thus been eliminated, says Mr. Judson, and on serial gold notes, substantially re-

duced. The surplus now of \$7,617,247.80 is the largest in the corporation's history.

Present indications, concludes Mr. Judson, justify the expectation that customers' requirements during the current year will tax the company's enlarged productive capacity. With this increased volume of business favorably reflected in earnings, early dividend action should thus be made possible.

Service Departments Keep Up Kansas City Dealers' Volume

KANSAS CITY, Mo., Jan. 5—December had opened with hopes but these were not fully realized in sales of new or used passenger cars or trucks. The truck trade was particularly small in December. Passenger car sales were more spotty than usual with only a few lines showing satisfactory volume. The cheaper cars were markedly slower, some dealers having only two or three sales during the month. The motor car trade, however, has been on a par with other businesses, men's wear and department stores having only a fair volume even in the rush of Christmas shopping and not enough to make up for previous deficiencies. During the Fall and Winter Christmas purchases were in small units.

It is noted that motor car dealers having efficient service departments on a business-like accounting basis are less concerned over slight sales of cars than others. Dealers report that the general tone of conditions is better than the first of December, salesmen being confident that prospects are really going to buy and the expectation is for a better January.

WILMINGTON SHOW JAN. 28

WILMINGTON, Del., Jan. 5—Arrangements have been completed for the annual Wilmington Motor Show, which will be held in the Hotel duPont from Jan. 28 to Feb. 2, inclusive. The show will be held, as heretofore, under the auspices of the Wilmington Automobile Trade Association. The Gold ballroom and DuBarry room of the hotel will be used, as well as part of the lobby.

The arrangements are in the hands of the following committee: Daniel P. Buckley, chairman; Harry R. Loose, Frank Diver, John Cahill, Nathaniel W. Howell, Harry Partington and Enoch Moore, Jr., the latter being secretary.

NEW MODELS SELL WELL

SALT LAKE CITY, Utah, Jan. 5—Business is normal for the season. The new models are selling best. The outlook for Spring is better than for past few years. The industrial situation throughout territory is highly satisfactory, particularly in Utah.

The used car market was fair for December. The demand is for bargains. Small cars are moving best. The demand for big cars is poor. Firms pushing used Fords are doing better than last Winter, in some cases.

Ford Outlines \$150,000,000 Development Plan for 1924

Includes Waterway From Detroit to Green Island (N. Y.) Factory and Many Plant Additions

DETROIT, Jan. 5—The expenditure of from \$110,000,000 to \$150,000,000 for expansion and improvement of plants is planned for 1924 by the Ford Motor Co., according to an announcement made this week. These plans include the development of an all-water route from Green Island, N. Y., where the company has completed a plant for the manufacture of radiators, gears and other parts; the completion of the St. Paul plant; an addition to the Kansas City plant, and other development work.

Outlining its expansion policy the company also says:

"Plans have been completed and construction is about to begin early in the year on a new assembly plant at Philadelphia. About Feb. 1 production is to begin at the Hegeswich plant near Chicago, where, in addition to the assembly of 600 cars and trucks per day, all closed bodies required in the Chicago district will be manufactured.

"The west coast is regarded as especially well prepared to handle the large volume of business expected in 1924, as a result of additions made to the Los Angeles assembling and manufacturing plant during the past year.

"The Ford expansion program for the south is reflected in the completion in 1923 of the new assembly and body plant at New Orleans and an addition to the plant at Atlanta, Ga. Other extensions are contemplated for the south during 1924.

"An addition will be built to the Kansas City assembly plant, increasing its floor space 168,000 square feet, and a new sales and service branch at Salt Lake City, on which construction has begun, will be completed in April."

As to its activities in the manufacture of by-products used in connection with the manufacture of Ford cars and trucks, the company adds:

"New coke ovens, now under construction at the River Rouge plant here, in which coke and its by-products will be manufactured by a low temperature process, will be put into operation. There also will be put into operation at River Rouge a cement plant which will make 1,000 barrels of cement daily from blast furnace slag, the cement to be used in the building operations of the company.

"At the Highland Park plant here, it is planned to extend manufacturing units and increase railroad facilities. A new body factory and wood distillation plant will be put into operation early in the year at Iron Mountain, Mich. Here the timber will be finished for automobile bodies, and in addition wood alcohol, wood tar, gas, oil and charcoal will be manufactured from the pieces too small for use in automobile body making."

Texas Dealers Enjoy Biggest Sales in Year Just Closed

Registration Figures Show 160,000 Cars Sold in State in Last 12 Months

DALLAS, Tex., Jan. 5.—The year which has just ended has been the most prosperous in the history of retail automotive merchandising in Texas. If the reports from Austin registration bureau are correct, some 200,000 more motor vehicles were registered in the state in 1923 than in 1922. The total number registered is around 700,000, which is an actual increase of some 160,000 over the registration of 1922.

Automobile men figure some 10 per cent of the cars registered in 1922 went to the junk pile before that year ended and claimed this will make up the additional 200,000 cars in Texas. The figures indicate more than 160,000 automobiles were sold in Texas in 1923. It is estimated by automobile men that the average price of motor vehicles sold in Texas was \$1,000, which would make the automobile business done in Texas in 1923 amount to \$160,000,000.

Dallas retail automobile men had the best business in their history. The same applies to the retailers in San Antonio, Houston, Fort Worth, Waco, Abilene, Wichita Falls, Greenville, Paris and a half dozen other cities from which reports have been received. The retailers have been able to get bigger cash payments and were enabled to collect notes in case they carried the paper themselves. In Dallas the retail sales were about 15 per cent greater than in 1922. In San Antonio and Houston the increase was about 15 per cent. In

some of the rural districts the percentage of increase was more than 100 per cent.

The financial situation in Texas as the dealers enter the new year is better than it has been at a similar period for five years and the retailers believe the trade for the next several weeks will be as brisk as it has been in the last several months. Some of the dealers are having trouble in getting new cars and this, they say, is hampering business.

The closed car of the moderate price and the light sixes appear to be favorites in most sections of the state—even in the rural district.

The used car problem still worries the retailers. Seventy per cent of the business is done on a trade-in basis. Established dealers have added used car departments to their business where cars received in trades are reconditioned and guaranteed to give service. By placing their reputation behind these cars such dealers are moving them at even money or better. They will continue that policy in 1924.

The tire and accessory men report the best business in years and the garage men say they are satisfied with their volume of trade. The truck dealers had a banner year but their business is a little slow right now. Generally the automotive business is humming and the outlook is bright.

PINCH THE SLOW ONES, TOO

PHILADELPHIA, Jan. 5.—Motorists who drive so slowly that they hold up a long line of cars on the highway will be stopped by the new State motor patrol almost as readily as those reckless drivers who burn the rubber at 50 or 60 miles an hour, both types being considered a nuisance and a menace.

Net Profit of \$8,000,000 Comes to Hudson in 1923

Company's Balance Sheet Shows Current Assets of \$16,000,000 Against \$3,582,367 Liabilities

DETROIT, Jan. 5.—Gross profits from sales of cars and parts by Hudson Motor Car Co. for the year ended Nov. 30, last, were \$14,472,351.38, which with other income and after deduction of expenses and taxes left net income transferable to surplus account of \$8,003,624.20. After dividends and adjustment of Federal taxes for prior years the company had a total surplus on Nov. 30 of \$9,459,979.32.

Total assets of the company according to the consolidated balance sheet are \$27,386,741.07. Current assets, including cash in banks of \$5,354,485.70 and inventories of \$6,453,355.41 and \$4,000,000 in United States notes, total \$16,409,915.42. Plant assets are \$10,050,271.94. Current liabilities are \$3,582,367.75. Capital stock is \$13,201,000.

In the report by President R. B. Jackson, he says: "Operations during the fiscal year have been profitable and sound. Net income after all taxes and depreciation aggregated \$6.67 a share or over 43 per cent on invested capital. Notwithstanding costly preparations for placing on the market Dec. 1 in much increased volume an entirely new six-cylinder Essex model, which involved many additions to machine shops and major alterations throughout factories, the company's financial strength and working capital have been substantially improved over last year.

"Our distributing agencies, already world wide and strong, have been increased in number and strengthened to support our 1924 program."

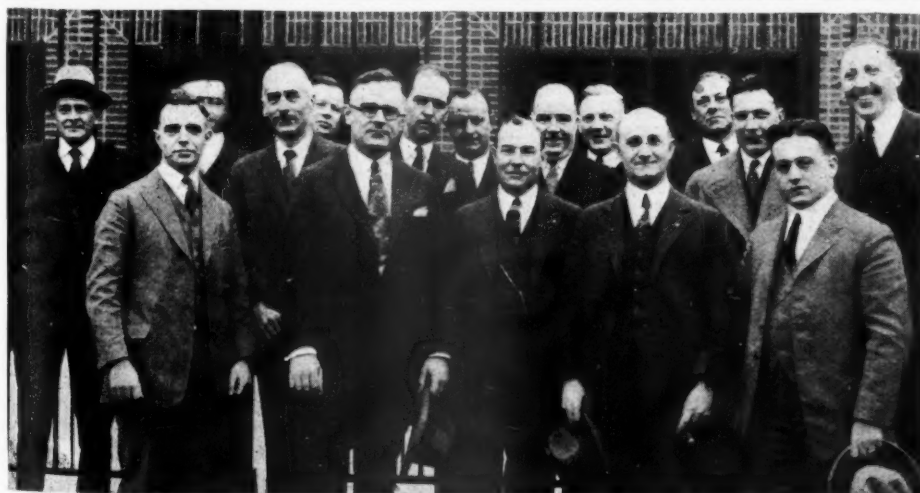
TWO RECEIVERS NAMED

BUFFALO, Jan. 5.—Following an involuntary petition in bankruptcy filed by creditors against the Herschell-Spillman Motor Co. in the United States District Court here on Dec. 22, Harold D. Wilson and Lawrence P. Hancock of Buffalo were appointed receivers, with instructions from the court to operate the plant until further ordered. The company reports assets of approximately \$2,236,827. Its good will is estimated at \$211,174. Its current liabilities are figured at \$589,000; fixed liabilities at \$808,000 and odds and ends, \$31,000.

ASSOCIATION HOLDS SMOKER

PHILADELPHIA, Jan. 4.—The annual December smoker of the Automobile Accessories Business Association was held in the quarters of the Philadelphia Automobile Trade Association, Broad and Callowhill streets. The feature of the evening was the vaudeville entertainment. More than 100 members attended. Dinner at 6:30 started the program. The business session, which was short, saw the newly elected officers in command.

Tire Branch Managers in Conference



Branch managers of the Dunlop Tire & Rubber Co. met in conference recently with factory officials at Buffalo, N. Y. In the photograph, left to right, are E. H. Kidder, general sales manager; W. A. Golden, manager Buffalo branch; F. H. Sawyer, Philadelphia; L. W. Kennedy, Atlanta; E. T. Richardson, Boston; T. W. Decker, Jr., Cleveland; R. L. Marshall, Texas; C. E. Neuman, Wisconsin; L. F. Desmond, Chicago; Charles P. Stearns, special representative; Howard Armstrong, truck tire representative; Warren Dow, credit department manager; E. A. Stephens and R. E. Allen, assistants to general sales manager.

CONCERNING MEN YOU KNOW

Kelly R. Jacoby, formerly sales manager of the Willys-Overland Co. and later vice-president and sales manager of the Earl, has been appointed southern sales manager of the Chandler Motor Car Co. Mr. Jacoby, who has been Chandler special representative in the field for some time, takes charge of a new district created by a re-division of territory, so that he will cover Virginia, Tennessee, Arkansas, Oklahoma, Texas (except the El Paso area) and all states south of these. Chandler's eastern district is under Frank E. Connor and the western territory is in charge of Ralph B. Nettleton.

H. S. Meese of the Commercial Truck Co. of Philadelphia and J. F. Kelly, Jr., of the Electric Storage Battery Co., will leave New York on Jan. 31 for a trip to Mexico and Cuba, reaching Mexico City on Feb. 6 and Havana and Feb. 20.

W. F. Martin, president of the Amco Manufacturing Co. of Indianapolis, has resigned to become sales manager of the jobbers division of the Penn Spring Works of Baldwinsville, N. Y. This company, which was organized in 1879 and which has been manufacturing chassis springs for both wagons and automobiles for nearly a half century, is about to bring out a new line of automobile bumpers.

George E. Willis has been appointed manager of export sales for the Studebaker Corp. to fill the vacancy caused by the advancement of H. S. Vance to the post of domestic sales manager. Mr. Willis' connection with Studebaker began in 1911, when he was named as manager of the Berlin branch. In 1914 he was transferred to Russia and in 1917 he became manager of the Studebaker branch in Des Moines. The following year he left the organization, but returned in 1921 to handle the Studebaker branch in Cleveland, where he was when the call came for him to take up his new position as export manager.

Floyd A. Knight, formerly with the Berkshire Products Corp., has resigned and accepted a position with the Origsby-Grunow-Hinds Co., Chicago, Ill., as sales manager, east central district, with headquarters at Cleveland.

F. A. Newman, formerly service manager for the R. H. Long Motors Co. branch in Springfield,

Mass., has bought the used car, repair and storage establishment of the McGregor Co. in that city.

Ed Baughman, well known throughout the south as manager of the Atlanta branch of Ozburn-Abston & Co., automotive equipment jobber with headquarters in Memphis, Tenn., has retired from the business. He has not yet decided his future activity. Mr. Baughman will undoubtedly be in the automotive field.

Walter O. Briggs, president of Briggs Mfg. Co., has been made a director of Security Trust Co., Detroit. In addition to his position as head of the Briggs company, one of the largest body building companies in the industry Mr. Briggs is also actively connected with other industrial and financial interests. He is also a director of the Merchants National Bank, Detroit.

D. Minard Shaw, formerly advertising manager and assistant sales manager of Earl Motors, and later with Courier Motors Co., has been placed in charge of advertising for Ford Motor Co. in the New York division. This territory includes New England, Washington, Philadelphia, Buffalo and Pittsburgh. Mr. Shaw will be located at the New York executive offices, 1710 Broadway.

E. H. Stolz, former assistant superintendent of the Ford branch at Houston, has been promoted to superintendent of the plant. A. R. Lajous, former assistant in the manager's office of the Houston branch, has been made manager of the Havana, Cuba, branch factory.

R. W. Lytle has been appointed service engineer of the Formica Insulation Co. of Cincinnati to assist manufacturing customers using Formica timing gear blanks.

W. R. Wilson, former president of Maxwell Motor Corp., and Henry T. Ewald, president of Campbell-Ewald Co., advertising counsel, have been elected directors of the Bank of Detroit.

Henry L. Lauer, Springfield, Ill., who has been with the Elliott-Van Brunt, Inc., distributors of the Packard, Willys-Knight and Overland cars in the Springfield territory, since the war, was promoted to the vice-presidency of the corporation last week, according to announcement by J. L. Elliott, president.

2100 Chevrolets Stored for Spring at Wilmington, Del.

WILMINGTON, Del., Jan. 5.—Chevrolet cars to the value of \$1,500,000 are being stored at the new Wilmington Marine Terminal for distribution throughout Delaware and Eastern Pennsylvania when the Spring season opens. This has been made possible because of the fact that in building the terminal, which has just been completed, arrangements were made to meet future shipping needs, which gives much larger warehouse facilities than are needed just at this time in connection with the terminal's shipping business.

The cars, 2,100 of them, are coming direct from the plant at Tarrytown, N. Y. There are 1,000 touring cars and 1,100 closed, of which 800 are sedans and 300 coupes.

The plan of utilizing the extra storage space at the terminal was decided upon by the Chevrolet management to offset the delays otherwise incident to the effort to rush orders to the territory indicated, with the coming of spring.

DETROIT DEALERS OPTIMISTIC

DETROIT, Jan. 5.—Sales of new cars in Detroit in the month of January are expected to run 5 per cent ahead of the same month last year in which sales totaled 2,746. Business has been running 50 per cent better each month in this city and is expected to continue to improve at this rate.

As a result of the general optimistic

spirit among dealers on spring business, stocking of new cars is now going forward at a rapid pace and they are taking all the cars they can lay hands on.

The used car situation has changed greatly for the better during the past month, due in large part to the open weather, and also to the fact that dealers have taken losses to make prices attractive to buyers.

SPRINGFIELD (ILL.) TO HAVE SHOW

SPRINGFIELD, Ill., Jan. 5.—The Christmas season was made one of especial cheer this year for the Springfield Automobile Dealers' Association, which a few weeks ago faced suspension of its gigantic spring show because of failure to secure an advantageous date for use of the State Armory building. Basil Ogg, chairman of the committee in charge of the exposition, announced that the Armory will be available Jan. 24-26 for a three-day show.

SEES BRIGHT TRUCK OUTLOOK

SPRINGFIELD, O., Jan. 5.—Prospects at the plant of the Kelly-Springfield Motor Truck Co. look brighter than they have before in the history of the company, Harry A. Conover, district sales manager, announces. During the last week a sales conference was held at the plant. Each of the district managers present stated that prospects were bright for 1924 and that they believed that this will be the largest year they have had in the sales of Kelly trucks.

Homes and Automobiles Go Together in Nation's Buying

Federal Board's Report Shows High Point in Purchasing of House Coincides With Motor Car Sales

WASHINGTON, Jan. 5.—An exceptionally heavy demand for homes and automobiles is one of the outstanding features of the industrial life of the country during the past year, the Federal Reserve Board states in its review of business developments during the year 1923.

"In addition to the large purchases of goods for immediate consumption there was an exceptionally heavy demand for houses and automobiles, as indicated by the growth in the construction of building and the manufacture of motor cars and is one of the year's features in the country's industrial life," the review states. "That this is true is indicated by the very large output of the automobile manufacturers, with a total of 4,000,000 vehicles, an increase of more than 50 per cent over 1922."

Building activities, the Board finds, reached a high level during 1922 and a maximum in the spring of 1923, then slackened somewhat, owing to the rapid advance in wages and in prices of material. The earnings of American farmers and consumers, notably industrial workers, increased to a greater extent than their necessary expenditures, with savings deposits resulting in a large growth over the 1922 total. Price levels, it was found, were more nearly stable than in any year since 1915.

A general increase of 13 per cent over the 1922 levels were shown during the year in both industrial employment and department store sales, while the total value of agricultural products advanced \$900,000,000 and the railroads, with improved facilities, carried the largest traffic in history.

Farmers, the Board finds, are exceedingly prosperous, having gained in three ways, their crops being large, their prices 12 per cent higher and their expenditures for repayment of loans being less than in 1922. The agricultural recovery, however, is described as being "still incomplete, particularly in the wheat and live stock industry."

RENAULT CROSSES SAND DUNES

NEW YORK, Jan. 5.—A copyrighted cablegram to the New York Times from the Oasis of Tozuer, Southern Tunisia, announces the successful crossing of the great sand dunes of the Sahara between Southern Algeria and Southern Tunisia by a Renault fitted with 12 wheels. The distance covered was 186 miles, 62 of which are through the worst sand dunes of the whole desert, the journey being made in two days as compared with 10 or 12 days required by camel caravans.

BUSINESS NOTES

The Abel Steam Vaporizer Co. has located its plant in Mediapolis, Iowa, and will manufacture Abel's steam vaporizer, the invention of Dr. J. F. Abel of that city. S. B. Matson is general manager of the company.

G. W. Munz of Louisville, Ky., has organized the Western Kentucky Kendell Co. and obtained the distribution for Kendell piston rings in 60 Kentucky and 16 Indiana counties.

The General Tire & Rubber Co., in its annual statement shows gross sales of \$9,000,000 and net profit of \$1,200,000, as compared with sales during 1922 of \$7,600,000 and net profit during the same year of \$1,060,000. Unit production during the year was 51 per cent greater than during previous year.

K. T. Wiedemann has closed a contract with the Moon Motor Car Co. by which he will dis-

tribute Moon cars in six states of the Northwest. The Wiedemann Co. will have offices in the Plymouth Building, Minneapolis, Minn., and will operate a strictly wholesale business.

The Perrine Quality Products Co. has been formed in Boston, with a capitalization of \$200,000, to manufacture Perrine Quality Batteries, and later other accessories first for New England and later for trade outside the territory. Lester Perrine, one of the leading accessory men in New England, is the head of the new company.

The Tuscora Rubber Co. of New Philadelphia, O., has been adjudged bankrupt by the Federal referee in bankruptcy. Willis Bacon of Akron has been appointed trustee by the creditors, whose claims are said to aggregate \$205,000. The new company owns its own plant.

Moline Plow Gives Up Its Tractor and Harvester Lines

President Peek Declares This Step Was Taken Because Products Were Not Profitable

MOLINE, Ill., Jan. 5.—In line with its recently announced policy of the elimination of the unprofitable lines of its industry, the Moline Plow Co. this week announced suspension of its harvester line manufactured at Poughkeepsie, N. Y., and its tractor line in the Universal Tractor plant at Rock Island, Ill. Press dispatches from the East, which indicated wholesale suspension of the Moline Plow Co. industry, however, were flatly contradicted by George N. Peek, president of the company.

Contracts for the disposal of such equipment in both plants as the Moline Plow may care to offer have been entered into and the new policies will become effective Jan. 1. Business in the strictly tillage lines has been better than in many years, officials of the company claim, and they view 1924 with a wider application and test of the Moline plan of sales distribution with extreme confidence.

Mr. Peek's statement follows:

"This message" (the Poughkeepsie press dispatch) "is wholly unauthorized. The facts are:

"We will discontinue the manufacture of harvesters at Poughkeepsie which has long been unprofitable. We will discontinue the manufacture of tractors at Rock Island, which likewise has been unprofitable.

"Contracts have been made with Samuel L. Winternitz & Co. and Michael Tauber & Co. both of Chicago, for the sale of such equipment as we care to dispose of at both these plants.

"Contracts have been entered into for the supply of repairs with the Standard Motor Parts Co. of Detroit.

"We are now figuring upon manufacture of mowers and rakes in our Stoughton plant. The manufacture of our tillage line in the plow factory at Moline, wagons, spreaders and hay tools at Stoughton, and drills and other seeding machinery in Minneapolis will be continued. Business in these lines is good—better than it has been for a number of years—and the success of the company upon these retained lines and under the Moline plan is assured.

"The plant property at Poughkeepsie will be sold. No decision has been reached regarding the disposition of the tractor plant. As soon as such a decision is reached it will be announced."

Timken-Gilliam Suit Settled by Agreement

CANTON, Ohio, Jan. 5.—The legal controversy between the Timken Roller Bearing Co. and the Gilliam Manufacturing Co. has been satisfactorily settled, a joint statement issued by the two companies says.

The statement in full reads as follows:

The case of the Timken Roller Bearing Co. against the Gilliam Manufacturing Co., which involved claims of the respective parties set forth in their pleadings was terminated today by a decree which was agreed upon by all parties.

When the case was reached for trial in the Common Pleas Court at Canton, Ohio, a conference was entered into between the parties and their attorneys, in which conference both sides took the position that a fair and complete statement of the various contentions might lead to a satisfactory adjustment and thereupon full discussion was had.

It was agreed that the Timken company had spent large sums of money in developing special machinery to be used in its roller bearing business, and this was especially true of its rotary hearth furnaces and its automatic roll grinding machines. In equipping the factory of the Gilliam Manufacturing Co., that company had substantially duplicated such roll grinding machines and such rotary hearth furnaces and consequently the decree as agreed upon provides that within the period of eighteen months one-half of the machines of these two types installed by the Gilliam Manufacturing Co. shall be dismantled and that within a further period of six months the remainder of such furnaces and machines shall be dismantled and thenceforward that company is enjoined from using similar furnaces and machines; but it is further provided that the Gilliam Manufacturing Co. shall be free to purchase in the open market machines with which to do the work of such furnaces and roll grinding machines, or it may design and perfect machines for such purposes, but any machinery to be designed by the Gilliam Manufacturing Co. shall not embody the same construction as the two machines of the Timken Roller Bearing Co. above mentioned.

All other matters in controversy between the two parties, including their respective claims for damages and for an accounting are dismissed.

34,912,257 WHEELS IN 15 YEARS

JACKSON, Mich., Jan. 5.—Celebrating its fifteenth year in business a few days ago the Hayes Wheel Co. announced that since its establishment in 1908 it has produced 34,912,257 wheels, or 8,728,064 complete sets. This, the company estimates, would have been sufficient to

equip 45 per cent of the passenger cars and trucks manufactured in that period.

During the last year the company produced 6,000 sets of wheels a day and for 1924 it is increasing its production to 7,500 sets a day. The output for the first 10 months of 1923 was valued at more than \$22,000,000. The company now has eight producing plants located at Jackson, Mich.; Albion, Mich.; Flint, Mich.; Anderson, Ind.; Nashville, Tenn.; Chatham, Ont.; St. Johns, Mich.

SALES FAIR IN LOUISVILLE

LOUISVILLE, Ky., Jan. 5.—Louisville dealers are well situated as the year draws to a close. This applies to those handling standard makes and who have cut their eye teeth in the business. Surplus stocks of used cars are loaded on the hands of the newer dealers and those who are reaching out for business with an off-brand car.

December sales received a spurt during the holiday season with a marked tendency this year toward increased demand for the higher priced makes. There is still some business going on, although it is generally quiet. Outside of a few dealers who are heavily loaded with used cars the trade is not at all downhearted over the slowing up of business for the last two months.

SMALL USED CAR STOCKS

ST. LOUIS, Jan. 5.—With the sale of new cars about 15 per cent above normal and the stock of used cars on hand below normal and taken in at closer figures than ever before, distributors in St. Louis face the new year in an optimistic mood. An increase in buying is looked for in the rural districts. A good indication is found in the excellent condition of accounts for re-possession, due to failure to meet notes. None has been reported for the past two weeks.

DECREASE IN PARTS SALES

NEW YORK, Jan. 4.—Reports from members of the Motor and Accessory Manufacturers Association show that sales in November decreased 4.20 per cent over October. Total sales amounted to \$51,634,670 as compared with \$53,803,350 in October. Past due accounts showed a decrease of 13.17 per cent and notes outstanding increased 5.95 per cent.

ELECTRICITY IN THE MOTOR CAR

NEW YORK, Jan. 5.—A motion picture, "Electricity in the Motor Car," will be exhibited by the North East Electric Co. at the Rialto Theater in New York Jan. 11. This film has been prepared to show by animated diagrams and drawings the basic principles of electricity as applied to motor car operation.

IN THE RETAIL FIELD

An automobile trade section has been organized by the Chamber of Commerce of Wilmington, Del., and the following officers have been elected for the year 1924: Managing committee, Nathaniel W. Howell, chairman; T. Coleman Johnson, Henry F. Seltzer, Walter S. Kidd and Daniel P. Buckley.

The Citizens Automobile Co., Dodge Brothers dealers at Chattanooga, Tenn., will erect a fireproof brick one-story garage at the intersection of McCalle and Highland Parks avenues to cost \$25,000. This will be a service station to the beautiful plant in Broad street.

A. Fassnacht & Sons, Chattanooga, Tenn., will spend \$19,000 to \$20,000 on their plant to be erected on the southeast corner of West Thirteenth and Fort streets. This firm specializes in repair work only.

The following have been appointed as new Chandler dealers: Chandler Cleveland Motor Car Co., Fresno, Calif.; The Lebanon Hardware Co., Lebanon, Ind.; H. P. Bonaima, Neche, N. D.; Pennsylvania Garage, Mahanoy City, Pa.

A. D. Mann, for several years connected with the Ellis Lumber Co. of Burlington, Ia., has been elected secretary and treasurer of the Barton Motor Co. of Burlington to succeed Arthur H. East, who is embarking in the E. & A., agency to handle the Chevrolet in that territory.

W. J. Keefe has purchased the Waterloo, Iowa, agency of the Hudson cars from the Hudson-Jones Co. of Des Moines and will take over that car, maintaining also the Essex line. Keefe was former Waterloo manager for the Overland branch of the Clemens Automobile Co. of Des Moines.

H. W. Chatterton of Connecticut, who recently acquired the Paige-Jewett Motor Co. at Ponca City, Okla., is remodeling and improving the entire interior of the company's store.

H. S. Easley has acquired the agency of the Dodge Brothers automobiles and trucks at Macon, Mo., adding it to his Paige and Jewett agency. Everett Howard, who has had the agency, is going to Kirksville, to enter the grocery business.

William P. Edwards, who for several years has conducted an automobile repair shop in Hancock street, Springfield, Mass., has opened a garage at 553 North Main street in that city.

The F. A. Magranis Co., Northampton, Mass., has been authorized to sell the Cadillac in that territory.

The Thompsonville Motor Co. has been incorporated in Thompsonville, Conn., and has purchased the business of the Cooley Motor Co. in that town. Grover and Harry Daniels, J. J. Fattersman and Frank A. Murphy are the incorporators.

The O. L. Hunting Co., Springfield, Mass., has been appointed distributor for the Rollin car in western Massachusetts.

Mecum, Flynn & Hunter, Chandler-Cleveland dealers in Sacramento, Cal., have retired from business. No announcement has been made on the appointment of a new dealer.

George W. Murray and Charles Speth have purchased the Sunkist Garage & Machine Shop at Blythe, Calif., from C. F. Bush, taking over with it the Chevrolet dealership.

The Sullivan Chevrolet Co. has leased salesroom and garage at 713 Hampshire street, Quincy, Ill., and will open headquarters soon after the first of the year. E. W. and R. H. Sullivan are members of the company.

Francis & Fipps, 1609 M street, have been appointed authorized sales and associate dealers for Nash in Sacramento, Cal. The Nash agency has been vacant since the retirement of F. E. Lauppe about a month ago, but it is said a Sacramento distributor will be announced shortly.

Sacramento branch of the Reo Motor Car Co. of California, Inc., has moved into the new \$40,000 building erected for it at 14th and K streets.

Reimnitz-Tollinger Motor Co., Woonsocket, S. D., held a public reception in its salesrooms recently in celebration of good business done in 1923. The company handles the Ford products.

Sterrett & Co., 9 North Paca street, Baltimore, has been incorporated to conduct a general automobile business. The incorporators are John W. Sterrett, W. Overton Snyder, Jr., Douglas B. Sterrett and Charles H. Ruth.

The Bohman Motor Co., Inc., Cumberland, Md., has been incorporated with capital stock of \$125,000 to deal in automobiles, trucks and tractors. The incorporators are George M., Florence, Otto P. and Mabel L. Bohman.

The Lincoln Highway Motor Corporation, Kenwood avenue and Belair road, Baltimore, has filed a petition asking to be dissolved. Following this action the corporation also asked that a receiver be appointed to take charge of the assets. Albert S. Gill was named receiver. According to the petition the corporation has assets of \$92,185.86,

of which \$66,723.63 is fee simple property subject to mortgages of \$26,727.59. The remainder of the assets, it is added, consist of open accounts and automobile accessories. The receiver was asked for the purpose of collecting the outstanding accounts and selling the assets.

R. W. Barclay of the Mason City Auto Co., Mason City, has taken the Oldsmobile contract for that territory.

The Griffen-Buick Company is the name of a new firm recently organized at Ottumwa, Iowa, to take over the business of the Davis Auto Company.

The S. & E. Chevrolet Sales Co., Ottumwa, Ia., has moved to a new building at 214-22 West Second street.

Franklin H. Clark, head of the Franklin H. Clark Co., Sioux City, Ia., dealer in Fords and Lincolns, has purchased a building site at the northeast corner of Fifth and Jennings streets, where a modern service station will be erected.

B. & B. Motor Co., 6019 Broadway, Chicago, has signed a contract to handle the Rollin at retail in addition to the Rickenbacker.

Lewis Bros. Motor Co., handling Paige and Jewett at 3922 Irving Park boulevard, Chicago, has opened a branch handling the same lines at 2478 North Clark street. C. K. Sanders, r., is manager of the new store.

Franklin-Butler Motors, Inc., handling the Franklin in Chicago, will open a new north side store at 5448 Broadway, giving the company six retail locations in the city.

A. S. Johnson, formerly associated with the Earl Chicago Co. and for several years prominent in Chicago automobile circles, has been appointed manager of the St. Louis branch of the General Motors Truck Co.

The Hawley Motor Co. of Marshall, Tex., has let a contract for the erection of a new home. The new building, which will be two stories high, will be especially designed for an automotive house. It will be completed at a cost of \$25,000.

The Martindale Motor Corporation of Martindale, Tex., was chartered this week. The capital stock is \$30,000. Among the incorporators are A. H. Smith, B. D. Horton and F. B. Smith.

The Jefferson Garage of Jefferson City, Mo., has secured the agency for the Nash cars and in the future will be known as the Kremer-Nash Motor Co.

The Tri-City Truck Co., 609 West Fourth street, Davenport, Ia., has taken the Haynes distribution in that territory, which includes Scott, Muscatine and Cedar counties in Iowa and Rock Island and Mercer in Illinois.

Recent additions to The New Bethlehem motor truck distributor organization are named by the factory at Allentown, Pa., as follows: Morrow Motors Corp., Houston, Tex.; Voges Motor Co., Miami, Fla.; Falsone Motor Co., Tampa, Fla.; Texas Motor Car Co., Austin, Tex.; Manufacturers Parts Service Corp., Detroit, Mich.; Bethlehem-Stevenson Co., Philadelphia, Pa., and Bethlehem-Stevenson Co., Syracuse, N. Y.

The Larson-Oldsmobile organization on North Broad street, Philadelphia, gave its annual Christmas party, the presents for all being brought in on the "Merry Oldsmobile" of 1899, which is still running strong. The talent for the entertainment was drawn entirely from the organization.

J. W. Leavitt & Co., Oakland and Oldsmobile distributor at Sacramento, Calif., has leased part of the old Certified Public Used Car Market at 1422 K street, for their used car and service departments.

The W. I. Elliott Co., Sacramento, Calif., has given up the Chevrolet franchise for that city and surrounding territory to become factory branch for northern California of the Star Motor Car Co. Under the new arrangement the Elliott company will be known as the W. I. Elliott Star Co., and in addition to handling Sacramento retail sales, will be distributor for some 18 counties in northern California and the Sacramento Valley. W. I. Elliott and his brother, Spencer Elliott, started in the automobile business in Sacramento 15 years ago in a small way. Recently they built and occupied a large three-story fireproof building.

Noted in the 1923 construction program at Nashville, Tenn., were new buildings for the Chevrolet-Nashville Co. and the Fisk Tire Co.

J. W. Thompson, formerly of Buffalo, N. Y., owner of the Thompson-Ford agency in Springfield, Ohio, announces the removal of his place of business and the home of the Ford and Lincoln cars to 130-134 West Main street, just west of the present location, where more space has been obtained for the extension of business. Mr. Thompson purchased the interests of Fred W. Moyer, who operated as the Moyer-Ford Co.

The William H. Metz Co. has moved from 415 12th street to 1314 Grand avenue, Des Moines,

Three Used Car Plans on N. A. D. A. Convention Program

Dealers to Get Information on the Appleby, Atlanta and Green Seal Methods

ST. LOUIS, Jan. 7.—In a bulletin sent out by headquarters of the National Automobile Dealers' Association announcing the program for the Chicago convention to be held at the LaSalle Hotel, Chicago, Jan. 28-31, the N. A. D. A. calls attention to the discussion of the used car problem. Three plans which have attracted nation wide interest in the last year will be discussed. The first of these plans, "The Appleby Motormart," will be presented by James E. Appleby, of Detroit. Appleby, together with Percy E. Chamberlain, has formed the Percy Chamberlain Associates, Inc., to nationalize the Appleby plan.

The second plan discussed will be the Atlanta Statistical Bureau which has been in operation throughout the year, and is maintained by Atlanta dealers. R. H. Martin, of Atlanta, president of the Martin-Nash Co., will speak on the accomplishments of the Atlanta plan.

The third plan to be presented will be the "Green Seal Merchandising Plan" developed by the dealers of Cleveland, Ohio, which has been in operation for about six months. R. J. Schmunk, Hudson-Essex distributor at Cleveland, will present this plan which has as its chief characteristic the reestablishing of confidence in the used car as an article of merchandise by standardizing its mechanical condition and guaranteeing that the car is in the condition represented when sold under the Green Seal certification of the Dealer Association.

The three plans will be presented at the Chicago meeting solely for the information of dealers who may be interested in knowing most recent developments in the trade and methods by which these developments have come about.

Ia. The company distributes Burd piston rings, Spencer-Smith pistons, Trindl pins and other replacement parts.

Among recent additions to the Gardner Motor Car Co.'s dealer organization are Kiess Bros., Cold Springs, Minn.; Steinhauser & Uhl, 1138 Lake street, Elmira, N. Y.; Indiana Virginia Truck Co., Roanoke, Va.; Boyer's Fireproof Garage, Schuylkill Haven, Pa., and M. A. Patton, Marietta, Pa.

The National Quick Service Auto Laundries Co. has been incorporated at Cincinnati, Ohio, with a capital of \$50,000 to operate a quick service automobile laundry.

The Grand Motor Sales & Service Co. has been chartered at 909 Grand avenue, Toledo, O., with an authorized capital of \$25,000 to buy and sell automobiles and accessories.

The Cosler Auto Co. of Springfield, Ohio, has been chartered with a capital of \$10,000 to buy, sell and deal in motor vehicles.

The Barnes Automobile Co., Central City, Ky., recently completed a new home.

The Lostro Auto Sales Co., 327 E. Broad street, Columbus, O., distributor of Durant and Star automobiles, has leased a portion of the Allen Motor Co., 400 Dublin avenue, Columbus, and will open there an extensive wholesale business of those two cars. Ultimate result of the change will be the establishment of an assembly plant at the Allen building to which Durant and Star parts will be shipped and assembled. J. R. Lostro, manager of the Lostro company, has taken a wholesale agency for the two cars in 25 counties surrounding Columbus. He plans to centralize wholesale distribution of these two cars from the Columbus plant.

COMING MOTOR EVENTS

AUTOMOBILE SHOWS

Akron, Ohio.....	February	Automobile Dealers Co., Frank O. Neil, Manager.	Milwaukee.....	Jan. 19-26	Milwaukee Automotive Dealers' Association, Bart J. Ruddle, Manager.
Albany, N. Y.....	Feb. 16-23	Albany Automobile Dealers' Association, J. B. Wood and L. Y. Long, Managers.	Milwaukee, Wis.....	Aug. 25-30	Milwaukee Automotive Dealers' Association, Fall Show, Bart L. Ruddle, Manager.
Albuquerque, N. M.....	Feb. 7-9	Albuquerque Automobile Trade Association, E. G. Fuhrmeyer, Secretary.	Minneapolis, Minn.....	Feb. 2-9	Minneapolis Automobile Trade Association, Walter R. Wilmot, Manager.
Atlanta, Ga.....	Feb. 16-24	Atlanta Automobile Association, Virgil W. Shepard, Manager.	Montreal, Canada.....	Jan. 19-26	Montreal Automobile Trade Association.
Baltimore.....	Jan. 19-26	Baltimore Automobile Dealers' Association, John E. Raine, Secretary.	Muskegon, Mich.....	March 4-8	Muskegon Automobile Trade Association, J. C. Fowler, Manager.
Beaver, Pa.....	Jan. 23-26	Beaver County Automobile Dealers Association, James W. Doncaster, Secretary.	Newark, N. J.....	Jan. 12-19	New Jersey Automobile Exhibition Co., Claud E. Holgate, Manager.
Binghamton, N. Y.....	Feb. 4-9	Annual Show, L. M. Napper, Chairman.	New York.....	Jan. 5-12	N. A. C. C. National Show, Eighth Coast Artillery Armory, S. A. Miles, Manager.
Boston, Mass.....	March 8-15	Boston Automobile Dealers' Association and the Commercial Motor Vehicle Association, Chester I. Campbell, Manager, 5 Park Square.	Oakland, Cal.....	Jan. 12-19	Alameda County Automotive Trades Association, Robert Martland, Manager.
Brooklyn.....	Jan. 19-26	Brooklyn Motor Vehicle Dealers' Association.	Oklahoma City, Okla.....	March 24-29	Oklahoma City Motor Car Dealers' Association, E. T. Bell, Secretary.
Buffalo.....	Jan. 12-19	Buffalo Automobile Show Committee, Carlton C. Proctor, Manager.	Omaha, Neb.....	Feb. 18-23	Omaha Automobile Trade Association, A. B. Waugh, Manager.
Burlington, Vt.....	April 2-5	Ethan Allen Club, Thomas W. Parkhill, Chairman.	Orlando, Fla.....	Feb. 12-16	Subtropical Midwinter Fair Association, C. E. Howard, Manager.
Calumet, Mich.....	April	Central Storage Co., Jos. A. Savini, Manager.	Philadelphia.....	Jan. 12-19	Philadelphia Automobile Trade Association, W. H. Metcalf, Manager.
Camden, N. J.....	March 3-8	Camden Automobile Trades Association, M. T. Ivins, Manager.	Pikeville, Ky.....	Jan. 17-19	Eastern Kentucky Automobile Show, F. W. Ruddy, Secretary.
Charlotte, N. C.....	March 3-8	Charlotte Automotive Trades Association, George E. Wilson, Chairman.	Portland, Me.....	Feb. 25-March 1	Portland Automobile Dealers' Association, Howard B. Chandler, Manager.
Chicago.....	Jan. 26-Feb. 2	N. A. C. C. National Show, Coliseum and First Regiment Armory, S. A. Miles, Manager.	Portland, Ore.....	Feb. 9-15	Automobile Dealers' Association of Portland, Ralph J. Steahli, Manager.
Chicago.....	Jan. 26-Feb. 2	Annual Salon, Drake Hotel.	Rochester, N. Y.....	Jan. 21-26	Rochester Automobile Dealers' Association, S. Park Harman, Manager.
Cincinnati.....	Feb. 9-16	Cincinnati Automobile Dealers' Association, Harry T. Gardner, Manager.	Sacramento, Cal.....	Sept. 1-10	State Agricultural Society, C. E. Faine, Manager.
Cleveland.....	Jan. 19-26	Cleveland Automobile Dealers' and Manufacturers' Association, Herbert Buckman, Manager.	Saginaw, Mich.....	March 4-8	Saginaw Automobile Dealers' Association, Guy S. Gauber, Manager.
Columbus, Ohio.....	Feb. 4-9	Columbus Automobile Dealers Co., Anson B. Coates, Manager.	San Francisco.....	Feb. 16-23	San Francisco Automobile Dealers' Association, G. A. Wahlgreen, Manager.
Dallas, Tex.....	Feb. 11-17	Dallas Automobile Trades Association.	Scranton, Pa.....	Jan. 31-Feb. 2	Scranton Motor Trades Association, Hugh B. Andrews, Manager.
Deadwood, S. D.....	Feb. 19-23	Deadwood Business Club, F. R. Baldwin, Manager.	Scranton, Pa.....	Feb. 4-9	Scranton Motor Trades Association, Hugh B. Andrews, Manager.
Denver, Colo.....	March 11-15	Denver Automobile Dealers' Association, F. F. Vic Roy, Manager.	Sioux Falls, S. D.....	Feb. 6-10	Sioux Falls Automobile Association, John P. Blug, Manager.
Des Moines, Ia.....	Feb. 25-March 1	Des Moines Automobile Trades Association, C. G. Van Vleet, Manager.	Springfield, Ill.....	Jan. 24-26	Springfield Automobile Dealers' Association, Basil W. Ogg, Manager.
Detroit, Mich.....	Jan. 19-26	Detroit Automobile Dealers' Association, H. H. Stuart, Manager.	Springfield, Mass.....	March 3-8	Springfield Automotive Dealers' Association, Harry W. Stacy, Manager.
Elmira, N. Y.....	Jan. 21-26	Elmira Automobile Merchants' Association, T. W. Keeton, Manager.	St. Louis.....	Feb. 17-24	St. Louis Automobile Dealers' Association, Robert E. Lee, Secretary.
Goldsboro, N. C.....	April 21-26	Chamber of Commerce, W. C. Denmark, Manager.	Syracuse, N. Y.....	Feb. 25-March 1	Syracuse Automobile Dealers' Association, C. H. Hayes, Manager.
Grand Rapids, Mich.....	Feb. 25-March 1	Passenger Car Dealers' Association, M. D. Elgin, Manager.	Toledo, Ohio.....	Feb. 4-9	Automotive Trades Association, H. V. Buelow, manager.
Great Falls, Mont.....	March	Montana Automobile Distributors' Association, Lyman E. Jones, Manager.	Toronto, Ont.....	Aug. 23-Sept. 6	Canadian Automotive Equipment Association and the Automotive Industries of Canada, Gib Robertson, Secretary.
Green Bay, Wis.....	Aug. 25-30	Automotive Division, Association of Commerce, W. F. Kerwin, Manager.	Troy, N. Y.....	Feb. 2-9	Troy Automobile Dealers' Association, Frank M. Baucus, Manager.
Greenville, S. C.....	Feb. 25-March 1	Greenville Chamber of Commerce.	Washington, D. C.....	March 8-15	Washington Automotive Trade Association, Walter Lambert, Secretary.
Hackensack, N. J.....	Jan. 12-19	Automotive Trade Association of Bergen County, Moe Katzman, Manager.	Washington Hgts., N. Y.....	March 26-31	Washington Heights Automobile Dealers' Association, H. G. Stiles, Manager.
Hartford, Conn.....	Feb. 16-23	Hartford Automobile Dealers' Association, Arthur Fifoot, Manager.	Waterbury, Conn.....	Jan. 14-19	Waterbury Automotive Dealers' Association.
Huntington, W. Va.....	Feb. 24-29	Huntington Automobile Dealers' Association, G. B. Roberson, Manager.	Wilmington, Del.....	Jan. 28-Feb. 2	Wilmington Automobile Trade Association, Daniel P. Buckley, Chairman.
Indianapolis.....	March 3-8	Indianapolis Automobile Trade Association, John B. Orman, Manager.	Yonkers, N. Y.....	March 3-8	Automobile Merchants' Association of Yonkers, Callahan and Partlan, Managers.
Kansas City, Mo.....	Feb. 9-16	Kansas City Motor Car Dealers' Association, George A. Bond, Secretary.	Youngstown, Ohio.....	Feb. 25-March 1	Youngstown Automobile Dealers' Association, C. A. Baird, Manager.
Louisville, Ky.....	Feb. 18-23	Louisville Automobile Dealers' Association, George T. Holmes, Secretary.			
Mankato, Minn.....	Feb. 27-Mar. 1	Mankato Automobile Dealers' Association, E. J. Dillman, Secretary.			
Middletown, N. Y.....	Feb. 5-9	Middletown Automobile Dealers' Association, Callahan and Partlan, Managers.			

CONVENTIONS

Albuquerque, N. M.....	May 26-31	U. S. Good Roads Exhibition.
Chicago.....	Jan. 14-19	Good Roads Show.
Detroit, Mich.....	Jan. 23	Annual Convention of the Michigan Automotive Trade Association.
Detroit, Mich.....	Jan. 22-25	S. A. E. Annual Meeting.
Montgomery, Ala.....	Jan. 21	Annual Meeting of the Alabama Automotive Trades Association.

The READERS' CLEARING HOUSE

Questions & Answers on Dealers' Problems

Flat Rate Charges in a Battery Station

Q—Can you tell us the average prices charged by the different battery service stations for all kinds of battery repair work? We want to keep our prices in line with other stations as near as possible.—Wesley Lau, Klemme, Iowa.

We have no great amount of data on the question of battery prices and so cannot give an average price list. We have, however, a list of prices in effect in Reading, Pa., and which are adhered to by the battery stations there. This list was sent to us through the courtesy of the Barbey Battery Service, Exide dealers in Reading, the various prices being as follows:

RECHARGING	
6 Volt Motorcycle or Ignition Battery.....	\$ 1.00
6 Volt Lighting or Starting Battery.....	1.50
12 Volt Starting Battery.....	1.75
16 Volt and over, Starting Battery.....	2.00
New Electrolyte and Reforming Plates, charging price plus.....	1.50
Removing Battery from car and installing another, \$1.00 per hour with minimum charge of.....	.25
Service calls within city limits, labor at \$1.50 per hour from time mechanic leaves service station until his return. Outside of city limits, labor as above, plus mileage charge per mile.....	.10
Reinsulating Batteries:	
6 Volt Motorcycle—Exide.....	6.00
6 Volt Motorcycle—Wico.....	7.50
6 Volt 13 plate and under.....	9.80
6 Volt 15 plate and over.....	10.70
12 Volt.....	12.25
16 and 18 Volt 7 plate.....	16.60
24 Volt 3 plate.....	17.50
New Wood Case; list price of case, plus labor charge of.....	1.00
New Jar; list price of jar, plus labor charge of.....	1.50
Labor charge on additional jars.....	1.00
(Testing for leaks where jars are removed and resealed, labor same as putting in new jars.)	
New Jar Covers; replacing broken molded covers, list price of cover, plus labor charge of.....	1.00
Labor charge on additional covers, each.....	.75
New Terminals or Cables; list price of terminal, plus a labor charge for one terminal.....	.75
Labor on additional terminals, each.....	.40
Burning New Terminals on Battery; list price of terminal, plus a labor charge for one terminal—when on the car, \$.75; when off the car.....	.50
Labor on additional terminals, each, when on the car, \$.40; when off the car.....	.25
Group Repairs:	
Burn one plate in group.....	.50
Burn two plates in same group.....	.75
Burn three or more in same group.....	1.00
Resealing; Resealing all types and sizes, exposed compound and surface only:	
6 volts.....	1.00
12 volts.....	1.50
Opening battery for inspection.....	1.00
Winter Storage, Wet:	
Four months or less.....	3.50
Over four months, per month.....	1.00

The Readers' Clearing House

THIS department is conducted to assist dealers and maintenance station executives in the solution of their problems.

All questions are answered direct by letter, so the name and address should be given in full. This saves waiting for the answer to be published, which sometimes occurs several weeks late, depending upon the space available.

Readers' names will not be published with articles, if a request to this effect is received with the letter.

Inquiries not of general interest will be answered by personal letter only. Emergency questions will be replied to by letter or telegram.

Also state whether a permanent file of MOTOR AGE is kept, for many times inquiries of an identical nature have been made and these are answered by reference to previous issues.

Addresses of business firms will not be published in this department but will be supplied by letter.

Technical questions answered by B. M. Ikert, P. L. Dumas and A. H. Packer; Legal, by Wellington Gustin; Paint, by G. King Franklin; Architectural, by Tom Wilder; Tires, by a Practical Tire Man; General Business questions, by MOTOR AGE organization in conference.

Removing and replacing battery at regular rate.....	1.00
Winter Storage, Dry:	
Same price as reinsurance. Ten days notice required for delivery.	
Service Batteries: Service Battery Rental, 25c per day, minimum charge, 50c. On battery overhaul job the rental will be \$1.50, plus 25c per day for every day of delay caused by the customer, either before overhaul is authorized or after notice of completion. Service batteries out over one month, regular rate the first month and \$5.00 per month thereafter. When service batteries are returned discharged, the customer will be charged for recharging same. Unidentified customers will be required to make a deposit equal to the cost of the service battery. A deposit will always be required if the customer does not bring his battery to the service station when taking away the service battery.	

We would like to hear from other battery shops advising what has been done along this line in their locality.

AIR LEAKS MAY CAUSE JERKY OPERATION AT LOW SPEED

Q—We are having trouble with a Chalmers 1922 model. This car runs perfectly above 10 m.p.h. Sometimes it will idle to 5 m.p.h. without jerking, some

times to 3 m.p.h. Other times it will jerk the universal joints to pieces at 8 to 10 m.p.h. if you do not slip the clutch. I have gone through the rear end, universal joints and transmission for loose keys, ground the valves, and ignition seems to be good. Carbureter has a well marked M 67-70-70. I drove the hole in the top rim with a No. 60 drill but it did not make any change in the idle. I would like to know what the trouble is with the idling speed?—Roy Gardner, Lebanon, Oregon.

The first probability as to the cause of the trouble would be a leak in the inlet manifold. To prove this diagnosis, remove the inlet manifold and install all new gaskets. Be very careful in installing these gaskets and in tightening them as it is easy to get uneven pressure on the gaskets which will cause leaking even though new ones are installed. It is best to put in the new gaskets and then tighten the manifold nuts evenly on each one in somewhat the same manner as you would tighten the cylinder head gasket on a high compression engine.

The well which comes with the carbureter as regular equipment has the same specifications as the one that you possess and we would therefore advise that you install a new well in place of the one that you have enlarged. If the new gaskets do not cure the trouble we would suggest that you test all over the manifold with gasoline squirted on it. Any speeding up or slowing down of the engine when gasoline is squirted around the manifold will mean a leak.

You state you have ground the valves and we would also advise that you test the compression to see that it is even on each cylinder.

DRAGGING CLUTCH WILL MAKE GEARS CLASH

Q—We have an Oldsmobile model 37 in which the clutch seems to drag. In changing gears no matter what shift is made the gears seem to, clash. Is this due to trouble in the throw out bearing or does it indicate that new facing is required on the cone clutch?—H. E. West, Hammond, Ind.

If the cone comes clear of the flywheel there should be no tendency for the clutch to drag or for the gears to clash. It is therefore evident that the cone does not perfectly clear the flywheel and this is probably due to wear in the clutch throwout bearing. Inspection will show there is a large nut which is adjustable to compensate to a certain extent for wear in the clutch throwout bearing. Work of this kind, however, is best done by an authorized Oldsmobile service station, and if you are not entirely familiar with the construction it might be well to turn the job over to such a station.

Elevator Location Which Wastes Considerable Space

Q—We are in receipt of your letter of the 28th ult., and certainly appreciate the promptness with which you acknowledged our letter. Enclosed you will find a partial layout of the building in question. Both the main and second floors each have two rows of cement posts, six in each row, and about twenty feet apart. The floors are all cement, in fact the building is practically all cement.

At the present time the front is divided into a showroom for autos, and two stores. However, the arrangement of windows, etc., at the present time does not count for much, as we anticipate they will have to be materially changed. We have figured that 50 ft. of the north frontage will be used for a showroom and the remaining 100 ft. for stockroom, and garage purposes.—Will County Motor Car Co., Joliet, Ill.

We have made a layout using the diagram which you sent us as a basis. The arrangement of columns in this building seems to be unusually good for a building that is not designed especially for garage purposes. It is to be regretted, however, that the space between the columns in the center is not greater, that is, that the rows of columns are not nearer the sides of the building. The elevator also seems to be very badly located, as it will kill considerable space on all three floors. Had it been placed on the street side of the building and opening directly on the street, it would have been in communication with the aisle inside and consequently, would have interfered with storage very slightly.

We have not laid out the basement plan as this floor will probably be used for storage and requires no space arrangement.

We have not considered the corner entrance to the showroom because we believe that the space is more valuable for display purposes and that the entrance is a matter of secondary consideration. If it were a bank or an office building, of course, the entrance would be the most important thing and the corner location would be advisable.

You have given us so little information regarding your departments that we have been obliged to call upon our imagination for information as regards the activities of your business. We have

Architectural Service

IN giving architectural advice, **MOTOR AGE** Rough pencil sketch showing size and shape of planning, building and equipping, maintenance stations, garages, dealers' establishments, shops, filling stations, and in fact, any building necessary to automotive activity.

When making request for assistance, please see that we have all the data necessary to an intelligent handling of the job. Among other things, we need such information as follows:

Rough pencil sketch showing size and shape of plot and its relation to streets and alleys.

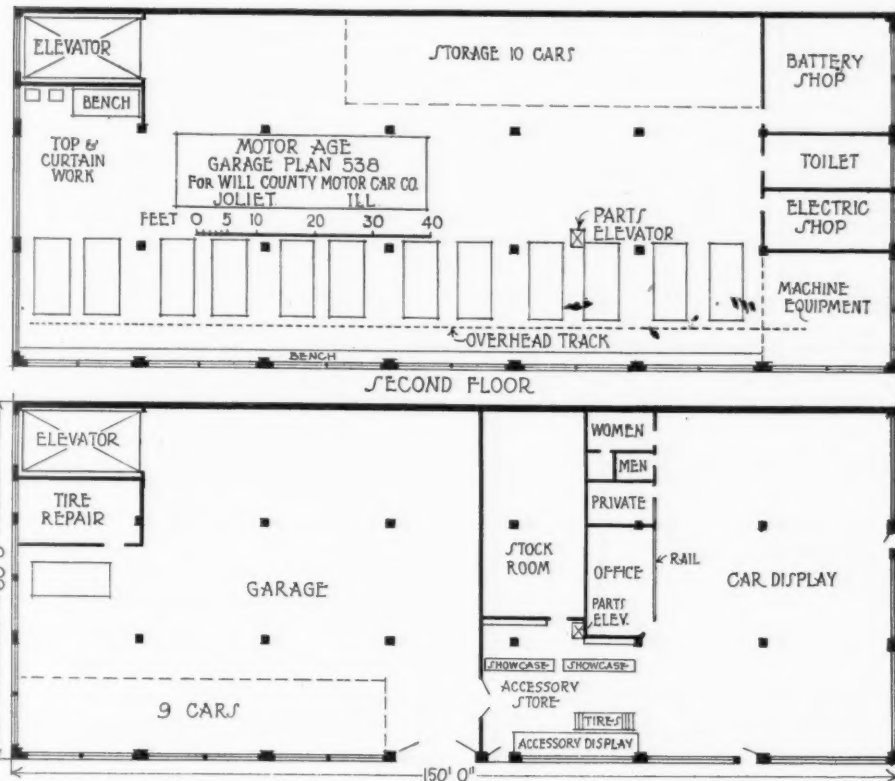
What departments are to be operated and how large it is expected to be.

Number of cars on the sales floor.

Number of cars it is expected to garage.

Number of men employed in repair shop.

How much of an accessory department is anticipated.



placed the repair department and all its branches on the second floor with the exception of tire repairs which, we believe, should be handled on the main floor. The parts and accessory stock will

be on the main floor where they will be accessible to retail customers and the parts elevator will make them as handy to the shop as if the stockroom were upon the second floor.

GENERATOR AND IGNITION TESTING EQUIPMENT WANTED

Q—I would like a wiring diagram for a test board to use in repair shop for testing generators, starters and coils, not an expensive one as I cannot afford to buy one at present.

1—An article in regard to constructing a test bench was given on page 23 of the May 24th, 1923 issue of **MOTOR AGE**, and we are sending you a copy of this page. An article was also given in regard to constructing an ignition tester on page 24 of the April 19th, 1923 issue of **MOTOR AGE** and we are also sending you a copy of this page.

2—Is it possible to use, in testing, a 110 volt transformer in connection with A. C. current? I think I could use a small transformer as used for door bells which will step the 110 volt A. C. current down to from 2 to 10 volts. I don't know however, whether the current I would get would be A. C. or D. C. after it got through the transformer.

2—The current after coming through the transformer will still be alternating current but will be at a lower voltage and greater current value. However, the average small transformer, such as is used for door bells, does not have enough current capacity so that you could use it for testing automobile equipment. It might be well if you would read a good book on automotive electricity and then study the electrical questions in the Readers' Clearing House Department of **MOTOR AGE**.

3—I have a diagram for testing Ford coils but would like to test other ignition coils also.

3—The page referred to, being sent you, which shows an ignition tester, will give method of doing this.

4—Where can I buy voltmeters, ammeters and other testing equipment?—J. P. Allen, Newburgh, New York.

4—This information will be given by letter.

VALVE LOCATION AND COMBUSTION CHAMBER DESIGN

Q—What is the percentage or ratio of the brake h.p. developed in a motor whose valves are in the head to one whose valves are to the side? We will assume, of course, that each motor has the same bore and stroke.—Fred J. Even, Dubuque, Iowa.

So many factors other than the ones mentioned have to do with the power available from an engine that we can give no ratio between the two. One theory as to power developed by an engine, however, is that the more nearly spherical the combustion chamber is the more efficient the engine will be. This has to do with the fact that a sphere has the greatest volume in comparison with its surface or external area. This means that for a certain volume there would be less radiating surface to dissipate heat.

The design of combustion chambers, however, is a rather deep subject and at present has to do with the question of detonation to such an extent that no arbitrary comparisons can be rendered.

Vibrating Regulator on 1916 Dodge

Q—Give method of increasing the charging rate on a NorthEast generator used on 1916 Dodge car.

1—The current output is controlled by means of a vibrating type regulator located inside of the generator. It is somewhat difficult to adjust it on the car as it requires loosening the generator clamp band and turning the generator over. It is possible, however. In the illustration it will be seen that there is a reverse current cutout which operates to connect the generator to the battery.

Just at the right of this is a limiting relay or vibrating regulator which will be seen to have two pairs of contacts each affected by magnetism and each having a spring. To increase the output of the generator it is necessary to stiffen the spring and this should be done equally on each spring.

To determine whether the pairs of contacts are adjusted alike an ammeter should be used in the charging circuit and tests should be made at fairly high speed by first holding one pair of contacts tightly together and then the other pair. When this experiment is tried it should have the same effect on the charging current.

Charging Batteries From Delco Light Plant

2—What equipment is needed in order to charge storage batteries from a 32 volt Delco light plant and where can this equipment be obtained?

2—Simple charging resistances selling for about \$2.00 are available from any Delco light dealer. These are used in lamp sockets and are put in series with the battery to be charged, the combination of battery and resistance then being put across the line. Charging may be done when the plant is running or may be done when the plant is standing if the main battery is well charged. For greatest efficiency four or five 6 volt batteries or equivalent should be charged at one time.

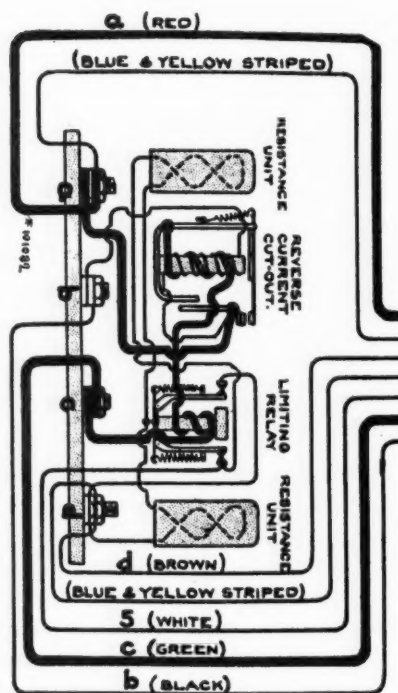
3—We have a FF magnetic rectifier which has burnt out the fuse wire across the frame. Will you give us some information on this system and probable location of a short which would cause this fuse to burn out?—W. Melvin Ayers, Exeter, N. H.

3—We have no particular information on this rectifier and would suggest that you communicate with the manufacturer, the France Mfg. Company, 10325 Berea Road, Cleveland, Ohio.

REPAIRING A WRECK AND THE JOB OF COLLECTING

Q—Two weeks ago I was called to pick up a wreck and received instructions to repair same. The flat rate for labor was agreed on at \$100, parts extra. The car in question had been bought the same day and first payment made. The car owner now says that he would rather lose the first payment than to pay the garage bill, which will amount to considerably more. The machine was bought for \$1,000 and he thinks that after giving instructions to the car distributor the latter will call and pay the garage bill.

What will be my position between the two parties and can the distributor be



made to pay for my work? Will he be obliged to take the car or can he bring suit against the buyer? Do you think that I should have a written form signed by the car owner authorizing me to lend the car to the distributor after the garage bill is paid? If the owner should call for it after it was given to the distributor would I be responsible?—Rhode Island Subscriber.

A—You have a claim for your reasonable charges against the car owner. To secure this claim you are given a lien against the car itself. The distributor is a third party to the transaction between you and your customer. However, if you do not care to take your chances of collecting all from your customer and feel that a judgment against him is not as safe or secure as holding the car, then this may bring in the distributor if he, too, should have a lien claim on the car.

Any third party who might hold a prior recorded mortgage on the car would come in to claim the car, through such a lien, contending same was or is superior to your lien for repairs. And the majority of courts have held that a prior recorded chattel mortgage is superior to the lien for repairs. Whether the distributor could recover the car from you through court action depends on whether he has a lien superior to your own.

Most dealers who sell on payments take back a form of chattel mortgage and perhaps this dealer did so, although you do not say so. But if he has a mortgage prior in time to yours, he must foreclose on his mortgage, and if upon sale there is a balance above what his mortgage calls for, you would be entitled to apply this balance on your own claim. Then you could collect the difference still owing you from the car owner who employed your services, etc.

If the distributor should recover the car from you by asserting a superior

lien to yours, you could not collect from him for the repairs. Otherwise you can hold the car until he has paid for the repairs.

The buyer is obligated to continue the payments on the car according to the contract he entered into with the distributor. And the distributor will only take the car in order to protect from loss his claim against the buyer. If the distributor thinks your customer is well worth a judgment for the value of the car, and will remain so, then he will not likely bother with recovering the car. It is not good business. But if he has a lien and fears loss, rest assured he will seek to protect himself by asserting his lien claim, the same as you are doing.

If the owner has given you authority to deliver the car to the distributor, then he cannot complain if you comply with his directions. A written statement would, of course, be evidence. But a witness that he told you to deliver would overcome his later denial of such a direction to you.

STICKING VALVE OR WRONG CLEARANCE MAY CAUSE MISSING

Q—We have a new Herschell-Spillman motor which is cutting out at high speeds, idles O. K. Have had three new carburetors, also three ignition systems all different makes including Rayfield, Zenith, Stromberg, Delco, Connecticut and Bosch high tension magneto. Also different style heads on motor. It works well up to about 2200 r.p.m. Timing checks up O. K. We have done everything we know of except changing valve timing, which seems to be O. K. Anything you have to offer will be appreciated.—John Baker, Springfield, Ohio.

Look for a stuck valve on this engine as it is one of the most probable causes of an engine miss, especially at high speed.

The next point to check is valve tappet clearance and by way of experimentation set all the tappets to .005 and try the engine. A stuck valve is our first diagnosis and we would recommend a very thorough examination along that line.

Regarding valve timing, if the exhaust valve closes when the piston is about 1/32 of an in. down from top dead center, that is past top dead center in the direction of rotation, the setting is correct. In case these suggestions do not eradicate the trouble, communicate with us and we shall make every effort to supply further information.

SIX CYLINDER CARS WITH SEVEN MAIN BEARINGS

Q—Give us a list of all six cylinder engines using seven main bearings.—Kansas City Flint Co., Kansas City, Mo.

We assume that you refer to American built cars. The following named use seven main bearings in their stock 6 cylinder engines: Locomobile, Dorris, Franklin, Holmes, Packard Single Six, Pierce-Arrow, Flint and Chrysler.

Warped Plate May Produce Clutch Trouble

Q—We would like information on a Buick 6, 1921. The clutch on this car if adjusted to release properly slips under load, and if adjusted to overcome the slipping it does not release. The lined disks have been renewed but this does not help any.—E. L. Generous, Syracuse, N. Y.

The only adjustment is that of the clutch pedal and this is correct when there is $\frac{1}{2}$ inch clearance between the pedal and the floorboard. If the pedal is too close to the floorboard it may hold the clutch partially out of engagement so that slipping will ensue. On the other hand if there is too much space between the pedal and the floorboard the clutch may not release perfectly when the pedal is all the way down. About the only thing that can give trouble is having a warped plate, warped plates occurring due to heat generated when the clutch slips for some time.

It is possible that in taking the clutch apart you have improperly assembled some of the pieces. It is accordingly recommended that unless a mechanic is thoroughly familiar with the construction that the work of assembling the clutch be done by a regular Buick service station.

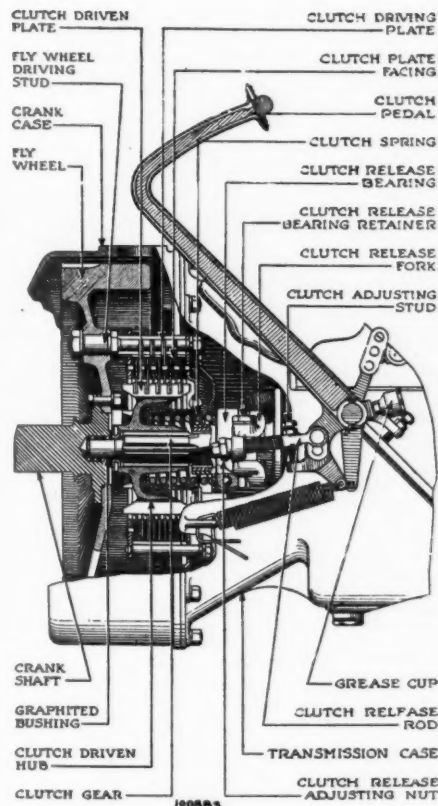
It is also possible to buy a whole new clutch assembly for approximately \$12 and this is sometimes more economical than trying to put in new plates only. When the clutch is properly adjusted there should be a 1-32 inch clearance between the ball thrust bearing and the rear plate against which it operates.

WHAT REDUCTION IN CYLINDER BORE MEANS TO THE ENGINE

Q—Advise if cutting down the bore of the cylinders from 5 inches to 4 inches on an engine with 6 inch stroke will increase the r.p.m. of the engine and also advise what difference it will make in the h.p. Also advise if a large flywheel of the same weight will give it more power and speed.—J. M. Herod, East Chicago, Ind.

Generally speaking the power obtainable from an engine is determined by the amount of fuel you are able to burn. This, of course, assumes that the fuel is burned efficiently, efficient combustion being obtained with the highest possible compression. A reduction of the bore of the engine is but one step in getting power from it and may or may not make the engine more powerful. It means that each time the piston goes down you have less power developed for you can burn less fuel. To make up for this it is necessary to increase the speed proportionately or at a greater rate than the cubic contents of the engine is reduced.

Just the change in the bore would probably have no great effect on the power of the engine. With a small bore, however, it is possible to have very light weight pistons and rods which make high speed possible. It is also necessary, however, to have high compression and to use some sort of anti-knock fuel such



as Benzol, and it is also necessary to use large intake passages and a large carburetor.

The flywheel has no effect on the speed but does have a great effect on the pickup or acceleration. The only reason for using a flywheel is to even up the power impulses and give a smooth flow of power to the rear wheels. If two flywheels weigh the same and one has a larger diameter than the other, the one with the larger diameter will have the greater flywheel effect. It will make the car pick up more slowly but will give more smooth running at very low speed.

SPECIAL X-RAY PLANT NOT READILY ADAPTED FOR AUTOMATIC OPERATION

Q—We have a Delco light plant model No. 9011. We would like to know if we can use this Delco light plant in connection with a Coolidge X-Ray tube so that it will operate automatically. We think that possibly by using a storage battery the plant could be made to start up by itself when one light is turned on. We would also want it arranged so that it would stop if the lights are all turned off.

The way this motor is made a man has to crank it every time he wants a light and this is unhandy around the garage. I am enclosing folder which describes this plant and the Coolidge tube.—Pallansch Bros. Garage, St. Joseph, Minn.

As nearly as we can determine the X-Ray tube described in the folder you sent us is a device used in connection with taking X-Ray photographs which seem desirable in certain surgical work. It however, has nothing to do with the operation of the plant and as nearly as we can determine the folder gives a description of the plant in order that the voltage will be suitably controlled for the tube.

As far as automatic operation of the plant is concerned this is entirely impracticable. From an experimental standpoint it is not very difficult to make up a lot of different relays and contacts which will operate automatically to start a plant but devices of this kind are so delicate that they require the services of an electrical engineer to keep them operating.

It is for this reason that Delco Light plants have not been put out with automatic features of this nature. You will accordingly get greatest satisfaction if you continue to use the plant in the way it is designed, and crank it by hand whenever light is needed.

LOOK FOR SHORTS OR GROUNDS IN THE OIL CIRCUIT

Q—We would like information regarding a 1918 six-cylinder Oldsmobile engine No. D2770, serial No. 152558 model 37. This car burns out No. 4 and No. 6 connecting rods as fast as we can put them in. The oil pump works well and there is always plenty of oil when they burn out. What can be the remedy for this?

1—The first thing to be done on this engine would be to remove the crankshaft. When you have it on the bench, with all the connecting rods removed, use high air pressure jet and see whether the oil holes are not obstructed. Test each oil hole individually and then try them all at once.

If you have a small tank handy fill it with oil, connect a tube in some way to the end of the crankshaft and put about 20 pounds of air pressure on top of the oil in the tank. When this is done a good solid stream of oil should issue from each of the connecting rod lubricating supply holes in the crankshaft pins.

There is every probability that the shaft is full of melted babbitt, due to the many rods that have been burned out. We therefore advise that a very thorough job be done of cleaning the shaft internally.

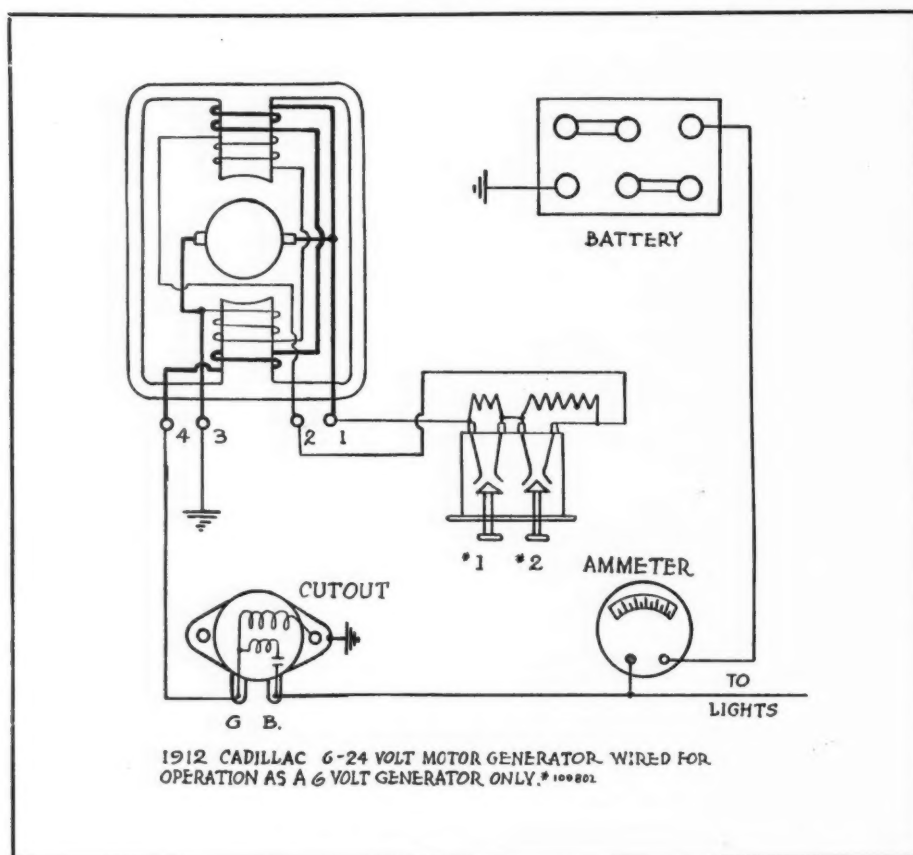
When fitting these bearings they should have at least .015 diametral clearance and great care should be taken to see that the connecting rods have the offset on the right side. On the Oldsmobile connecting rod bearings, the upright of the connecting rod is offset to the center of the lower connecting rod bearing bushing and if they are installed backwards on the crankshaft pin the rod will be bent and great pressure will be placed on the bearings, with the consequence that they will burn out even though oil is present.

Check the rods for straightness when you have them on the crankshaft and, when the block is installed, turn the engine over slowly while viewing it from below and see whether or not the rod moves back and forth on the piston pin or whether it hugs one side or the other of the piston boss.

2—Can we get a special oil pump for this car?—Queen & Hollbrook Garage, Detroit, Mich.

2—If the pump that you are using will pump up to 25 or 30 lbs. there is no necessity for any special pump. Look to the crankshaft oil holes being obstructed for the cause of the trouble.

Revamped Wiring for Old Hudson or Cadillac



Q—We have a Hudson model 1914 equipped with a 24 volt battery and a motor generator which generates at 6 volts and requires 24 volts to start it. The mechanism is quite complicated and gives considerable trouble. Is there some way in which a 12 volt starter with generator would do the required work? The motor is a Continental 6 cylinder 4 1/4 inch bore. —Catskill Tire & Vulcanizing Works, Catskill, New York.

It is not impossible to remove the present motor generator and install a 12 volt starter and locate a generator some other place on the engine. The cost of doing this, however, would not be reasonable compared with the value of a car of this age. Considerable blacksmith and machine work will be involved and it will mean the expenditure of both time and money with the result that the cost of the electrical installation will be greater than the sale value of the car.

If you wish to discard the starter feature of the present generator it can be utilized as a 6 volt generator to take care of the lights and ignition. The diagram shown was designed for the conversion of a 1913 Cadillac and as the Cadillac carries the same Delco equipment as the 1913-6-54 Hudson it will also apply to this car as a guide in rewiring.

The No. 3 terminal being one side of the armature as well as one end of the shunt field is shown grounded. The No. 1 terminal is the connection from the live generator brush. Connecting No. 1 and No. 2 together might give too much charging current to the battery so the regulating two gang switch is recom-

mended with the resistance coil of iron or German silver on the back.

It will be seen that the coil on No. 1 switch is shorter than the coil on No. 2. In operation both switch buttons are pushed in for low speed and if at high speed the current in the battery is too great the No. 1 button is pulled out. If this does not regulate enough it is pushed in and No. 2 pulled out and if this is not sufficient both buttons can be pulled out throwing all the resistance in series with the shunt field. If this should not be enough resistance it would be necessary to rewind these resistances with coils of greater length or with smaller wire.

Light and ignition circuits can both be connected to the side of the ammeter on which the wire is shown marked "to lights." The Hudson installation made use of three separate switches and the line side of the light wire is connected to each one of these switches. One side of each bulb is grounded.

The converted diagram makes use of a cutout for which purpose any standard 6 volt device is suitable.

If the 24 volt battery is in good condition, it would be advisable to connect the four separate batteries in parallel. This means that all minus terminals should be connected together and all plus terminals. In one group either the minus or the plus terminal is grounded and the other one brought to the ammeter as shown in the diagram.

In converting this system disregard the

old wiring and when you have made the circuits and connections, as shown on the diagram, you may discard the controller and latch mechanism.

BRAKING FORCE NEEDED TO STOP THE CAR

Q—I am working on a certain part for an automobile and am confronted with a problem which I am unable to solve or get an approximate figure on and would ask you to oblige me with same.

An automobile weighs about 5000 pounds, travels at the rate of 50 m.p.h., each foot brake is in first class condition, the rear wheel is 40 inches in diameter and weighs about 75 pounds including the tire, and the wheel has about 16 square inches of road contact, the road is of concrete.

What I want to know is the pressure exerted on the brake band anchor or bracket if it were 9 inches from the axle. I believe there would be two pressures, the centrifugal force of the wheel and the other the speed and weight of the car. Would it be possible to lock the wheel at that speed instantly or would it turn a few times before the wheel became motionless?—Julius Brell, New York City.

We will first pass over the energy required to stop the wheel and consider that the wheel has been locked and that the car is still in motion with the two rear wheels sliding on the concrete pavement.

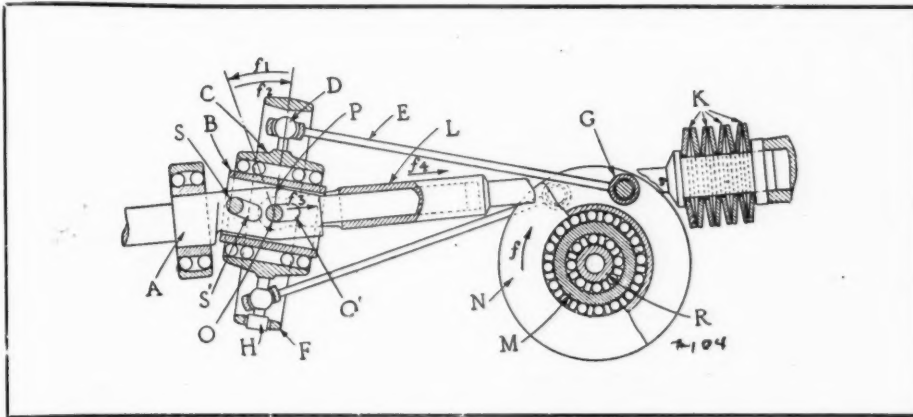
We will assume that .6 of the total weight rests on the rear wheels which means that 3000 pounds is carried by the rear axle of which 1500 pounds is on each wheel. We will also assume that the coefficient between the rubber and the concrete is .6. Then we multiply 1500 pounds by .6 and find that there is a 900 pound drag on the surface of the tire which is in contact with the road.

To resist this force we must have a greater force acting at the surface of the brake drum and this force is inversely proportional to the distances from the center of the axle. As the radius of the tire is 20 inches and of the brake drum 9 inches we divide 900 pounds by 9 and multiply by 20 which gives us 2000 pounds, the strain on each brake band anchor.

We will now consider what would happen if all we had to do was to stop the rotating wheel. From experience you know that a very light pressure applied to the wheel will stop it in time and that to stop it more quickly you need a heavier pressure. It is impossible to stop the wheel instantly for this would require an infinite force, assuming that there is such a thing.

You can see, therefore, that it is somewhat hard to calculate the strain due to stopping the wheel as this varies with every assumption as to the time in which the wheel is allowed to spin before being locked. You would probably be safe, however, to figure a total of 2500 pounds as the load that each brake band anchor would have to carry. You will note that in the calculation the speed of the car does not enter as it is assumed that the frictional drag of the wheel on the pavement is the same at all speeds.

Principle of Lavaud Automatic Transmission



Q—In your November 8th issue of *Motor Age* there was an article telling about an auto transmission being perfected by a certain Voisin Company in France. Would it be possible for you to give me an idea of the principles they employ or tell me where I could get same, also if U. S. patents are issued? I am very much interested in transmissions as I am at present working on such a device as mentioned in your magazine.

I have not as yet applied for patents and any information you could give me would be very much appreciated. My device is such as could be installed in any car at a small expense and would entirely do away with the shifting of gears under any road conditions. The similarity of same with the description of the Voisin device in your magazine causes a little anxiety on my part.—G. E. Andrews, San Francisco, Calif.

The Voisin Company of France has secured control of the Lavaud transmission, by the use of which the ordinary change speed mechanism is abolished and the gear ratio is automatically changed in accordance with changes in the resistance encountered at the rear wheels.

It does not appear to be the intention to immediately apply this device to cars delivered to the public, but the Voisin engineers were so impressed with its possibilities that the rights to the invention were purchased and tests will be continued. Various makes of French light cars, and also one Nash, have been on the road during the past year with this transmission, and the results, it is claimed, have been very satisfactory.

By the Lavaud transmission the continuous rotary motion of the engine crankshaft is transformed into a reciprocating motion of connecting rods whose length of stroke is automatically varied by the traction resistance in inverse proportion to that resistance. This reciprocating motion is again transformed into a continuous rotary motion by means of ball ratchets.

In the illustration, shaft A is an extension of the engine crankshaft which, as shown at P, is lozenge-shaped when seen in longitudinal section and a rectangle in a transverse section. The sleeve B, with a rectangular slot, is mounted on the shaft, rotating with it and capable of sliding on it. It is guided in the sliding movement by two pivots, O and S, fixed to the sleeve and moving in the openings O' and S' in the shaft A. Two ball bear-

ings mounted on sleeve B carry the plate C, which is concentric with the sleeve.

On plate C there are a series of ball-ended posts D, on which are fulcrumed connecting rods E, each one of which has its opposite end G connected to a ball ratchet N. These ball ratchets drive the hub M in the direction shown by the arrow f. On plate C are two diametrically opposed trunnions H, pivoting on ring F. This ring is fitted with two other opposed trunnions in a plane perpendicular to trunnions H and pivoting to the fork L. This fork can move longitudinally, but it cannot revolve, and near its end it is provided with a collar against which presses a coil spring or series of spring washers K bearing against the rear axle housing.

Operation Explained

When shaft A revolves it carries with it sleeve B, the axis of which describes a cone around the axis of shaft A. This sleeve performs its conical motion inside plate C which is prevented from turning by being connected by trunnions H to the ring F; the latter in turn is united by trunnions to fork L, which cannot revolve. This causes plate C to oscillate around the axis O perpendicular to the plane of the figure. This axis O is revolved by the movement of shaft A and, as a consequence, the connecting rods oscillate as indicated by arrows f' and f'', the phase of oscillation of one being displaced relative to that of the adjacent rod.

The oscillating movement being transmitted by each rod to its corresponding ball ratchet N, a series of impulses in quick succession is given to the hub M, and through it to the road wheels.

When the resistance at the road wheels increases, the load on the connecting rods is increased in the same proportion and, in consequence, there is a reaction on plate C. Under this reaction plate C tends to take up a position perpendicular to the axis of shaft A. In this movement trunnion O is moved toward the right of the figure, carrying with it fork L, which, through its collar, compresses spring K. The degree of compression of spring K, therefore, measures, on a convenient scale, the value of the resisting moment which the engine torque must overcome.

As the oscillating movement of plate C is proportional to the degree of compression of spring K, it follows that the stroke of the connecting rods is variable and the gear ratio is inversely proportional to the resistance. In climbing a hill the throttle can be set to a given position and as the gear ratio is increased in the same proportion as the rear axle torque increases, the engine torque remains constant and the engine, therefore, will automatically maintain a constant speed.

It is apparent from this description, which was taken from *Automotive Industries*, that the Voisin engineers possess patent rights for the device in France. Whether or not they will control the foreign patents we do not know and suggest that you get in touch with the Voisin Automobile Company, France.

WHY PARTS MAKERS SHOULD PROSPER

Q—Will you please solve this problem for me? We have a Fordson tractor that burns up coil points in a few minutes, especially when it is speeded up to 1000 r.p.m. This tractor has always done this since new and it has been in use for about three years.—Wall Bros. Auto Co., Hampton, Nebr.

You can reduce the flashing and consequently the burning of the contacts by slightly reducing the vibrator spring tension. This is controlled by the "U" shaped support at one side of the coil. Opening up the "U" shaped bracket will reduce the tension somewhat. It will, of course, also reduce the intensity of the spark to a certain extent for the points will open before the current in the coil has built up to as great a value as formerly.

This is an unusual complaint and it is possible that in this tractor the field coils are assembled a little closer to the rotating magnets than is customary.

We wonder if you have been using the regular coil supplied by the Ford Company, for consistent trouble of this kind might be due to poor material in the contacts such as might be found if a good coil were not used.

If you are unable to overcome the condition in any other way you might install a single gang lighting switch across the back of which you could wire up an iron wire resistance. This switch could then be connected in series between the magneto terminal and the wire normally connected to that terminal. In starting you could have the switch making contact so as to short cut the resistance and then when the engine is started you could pull out the push button so that the current from the magneto going to the coil would have to flow through the resistance. This would cut down the amount of this current and would have a slight tendency toward reducing the sparking at the contacts. The current at the contacts, however, is controlled more by the adjustment of the spring tension than in any other way, although the magneto voltage and resistance of the circuit have some effect upon it.

Guards on Flivver for Auto Polo

If Life Seems Dull and There Isn't Any War, Try This Little Parlor Game

By A. H. PACKER

A NUMBER of inquiries asking for rules on Auto Polo and particularly for instructions in preparing a car for this game have been received so that the illustrations shown, together with information as to the size of the guard irons, should be of interest to many and of use to those who expect to build cars of this type.

The chassis used was a standard Ford chassis but the engine was equipped with overhead valve type cylinder head to make the job snappy. In Fig. 1 the various guards are shown and, as these parts were painted white, they can be easily seen. There is a guard over the radiator and an iron frame work taking the place of the dash. The driver sits in a bucket-seat and immediately behind him is a large guard 3 feet high. The gasoline tank is located behind this guard.

The central vertical piece in the large guard behind the driver's seat consists of a piece of iron pipe $2\frac{1}{2}$ inches in diameter and 3 feet long. It is attached by a flange to a heavy wooden cross piece. In Fig. 1 it will be seen that there is a wooden beam running lengthwise of the chassis and on this a floor is laid, the frame of the car is also filled with wood to stiffen it.

The iron strap, which goes in a circular shape to form the outer rim of the guard behind the driver's seat, is made of $\frac{1}{4} \times 2\frac{1}{2}$ inch iron. The iron braces next to the vertical iron pipe in the center are made of $\frac{3}{8} \times 2$ inch iron, while the next braces outward are also $\frac{3}{8} \times 2$ as well as the third brace from the central iron pipe. The lowest brace is $\frac{1}{4} \times 2\frac{1}{2}$ inches. This sums up the dimensions of



The fan-shaped brace behind the driver is designed for protection when the car turns turtle



Wire netting keeps the flying stones from hitting the player's legs

the spoke-like braces of the guard behind the driver's seat.

From the loops to the running board a brace will be seen and this is made of $\frac{1}{4} \times 1\frac{1}{4}$ inch iron while the brace running from the running board to the rear of the car is made of $\frac{1}{4} \times 1$ inch iron. From the upper portion of the fan shaped brace behind the driver's seat, a brace runs down to the rear of the car, this brace

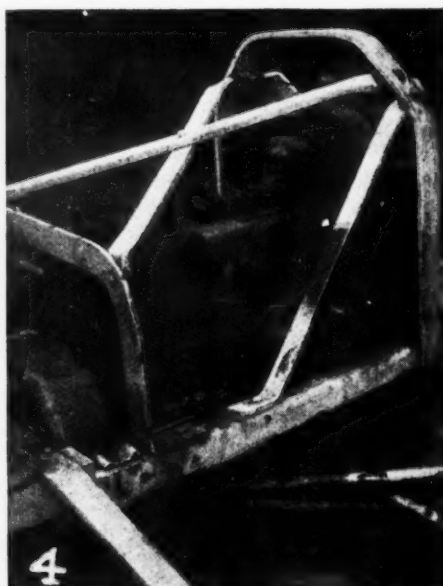
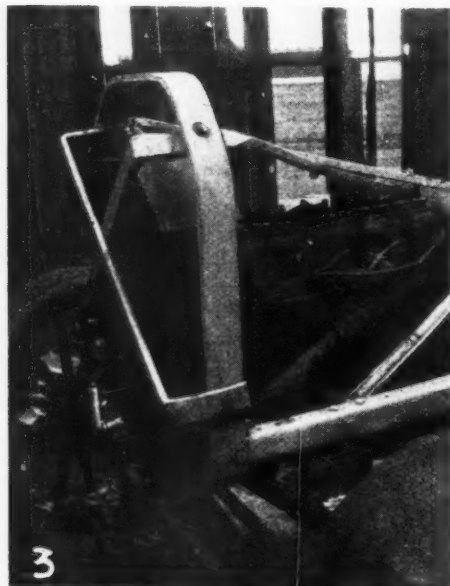
being best shown in Fig. 1, and its size is $\frac{3}{8} \times 2$ inches. At the front of the running board a brace is also used and this is best shown in Fig. 4, at the lower portion, the size being $\frac{3}{8} \times 2$ inches.

The dash iron to which the steering column is attached is made of $\frac{1}{4}$ by 2 inch iron while the piece over the radiator is made of $\frac{1}{2} \times 2\frac{1}{2}$ inch iron. The cross pieces directly over the engine are made of $\frac{5}{8} \times 1\frac{1}{2}$ inch iron while the cross bars in front of the radiator are $\frac{1}{2} \times 1\frac{3}{4}$ inch iron. The angle brace coming back from the radiator guard is made of $\frac{1}{2} \times 1\frac{1}{2}$ inch iron. These sizes of course might be varied somewhat but were used with success on a number of cars used in playing auto polo.

MOTOR TRANSFER CONFERENCE

WASHINGTON, Jan. 5—Consideration of the relation of highways and motor transport to other transportation agencies will be one of the major problems of the national conference on transportation called to meet here on Jan. 9, 10 and 11, and will be taken up for consideration on the second day, Thursday, of the meeting.

The Committee's special report will be presented to the 200 or more delegates by Alfred H. Swayne, chairman of the committee, who is also the National Automobile Chamber of Commerce's representative in the United States Chamber of Commerce. Following the presentation of the report an open discussion on same will be made.



Two views of the engine and radiator guards. All working parts must be protected if the car decides to roll over

GETTING MORE OUT of the SHOP

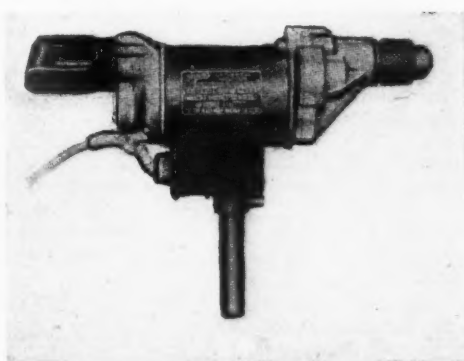
THE New York show is always the gong for the opening of the buying season. To be sure, there has been no "season" as yet that has not been a buying one. With over 4,000,000 cars and trucks sold in 1923, this year promises just as great or even greater returns. There is no reason why the shop should not make money in 1924—many shops made plenty last year because they were equipped to handle any demand made upon them. They went after business, let it be known that they were equipped to handle a large volume and the result was more money. You, too, can make money in the shop next year, if you are equipped to do the work.

A dressing for brake lining intended to eliminate squeaking and grabbing and at the same time give a powerful grip, is made by the Korite Products, Inc., 292 Main St., Boston. This dressing is applicable to all kinds of brake lining.

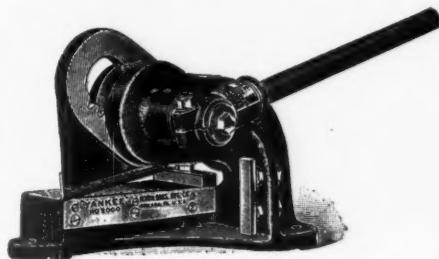
A multi-purpose tool which functions as a straightening or light arbor press and has a connecting rod alignment attachment which forms an integral part of the press is the Engine Service Press. Additional equipment can be supplied for handling brake lining. It consists of base carrying two plungers, one for pressing out old rivets, the other for punching new holes. It handles both solid and tubular rivets. The fabric is not countersunk. A vertical post for mounting a micrometer dial gage is provided, and an adjustable knurled thumb-screw can be set to prevent the shaft from being oversprung. The capacity of the press is 5 tons and weighs complete 370 lbs. It is made by Weaver Mfg. Co., Springfield, Ill.

The Dunning Air Compressor is an air compressor made in all sizes up to 30 cu. ft. capacity per minute. It is air-cooled and the cylinders, oil reservoir and base are in a one-piece casting. The cylinders extend horizontally through the length of the casting and their ends are covered with removable cylinder heads which hold the valves. A long double piston of one casting is employed to reach from the end of one cylinder into the other cylinder. The piston is operated by means of a hollow eccentric shaft which fits into a bronze bearing of large diameter. Bearings are lubricated by a force-feed system operated by a plunger pump. All electrically driven models of these compressors are supplied with an automatic filter. Made by the George Sachsenmaier Co., 926 North Third Street, Philadelphia.

A combination wrench set which supplies the following tools and combination of tools: one valve grinder, one valve lifter, one spark plug speed wrench, one spark plug "L" wrench, seven "L" socket wrenches, seven speed socket wrenches, seven "L" socket wrenches with universal joint, and seven



Hisey side handle drill

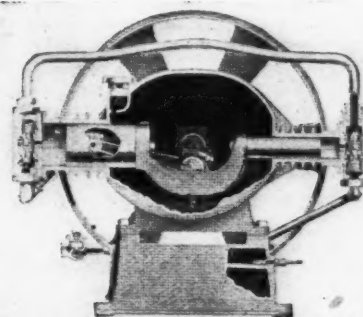


Yankee brake lining cutter

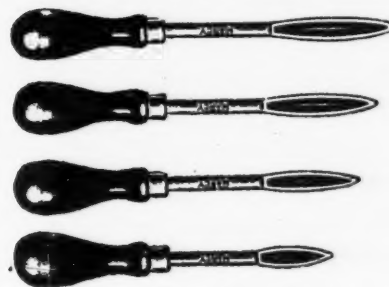
speed socket wrenches with universal joint, is announced by the Hol-Set Co., Rochester, N. Y. The sockets are cut machined steel, broached to an extra depth, knurled, tapered and hardened. The brace is formed from bar steel, fitted with revolving cap and hardened. The entire set is finished in white nickel. Price, \$3.50.

The Yankee brake lining and belting cutter is designed to give a quick clean cut on brake lining material and leather or rubber belting. It will take material up to $\frac{3}{4}$ in. thick and 6 in. wide. It will not cut metal. Power is secured through a rack and pinion movement operated by the hand lever. The knives are of steel, ground and carefully fitted. Adjustment is provided by three screws and set-screws on the lower knife. There are adjustable guides on the base and frame to insure alignment of work at right angles to the knives. This cutter is made by North Bros. Mfg. Co., Philadelphia, Pa.

The Hisey Side Handle Drill is put out in two types, Type 24KUH is adapted for wood and metal drilling where high speed is desired and Type 24KUSX is a slow speed machine for drilling hard metals. It is equipped with a Hisey motor for operation on alternating current (60 cycles or less) and a direct current of the same voltage. A quick cable connector is supplied and repairs and renewals can be made without dismantling the machine. Each machine is supplied with 15 ft. electrical conductor cable fitted with suitable attaching plug and Jacobs drill chuck for



Dunning air compressor



Marcy bearing scraper set

holding straight round shank drills from 0 to $\frac{1}{8}$ in. diameter.

Made by the Hisey-Wolf Machine Co., Cincinnati, Ohio.

The Lipe counterborer is an adjustable valve seat counterborer which carries tool steel cutting bits mounted in guides at the bottom of the outside shell. These bits are movable within the guides and have a range of diameter from $1\frac{3}{8}$ to $2\frac{5}{8}$ in. inclusive controlled by the knurled nut on top. Adjustment is possible without removing tool from valve port. Width of seat is controlled by the diameter to which the cutters are extended. The tool sells for \$10 and includes three pilot rods of $\frac{3}{8}$, $\frac{1}{2}$, and $\frac{3}{4}$ in. diameter.

Made by the R. N. Roach Co., Rialto Building, San Francisco.

A bearing scraper set, each tool having a V-shaped blade requiring grinding only on the bottom edge, has been brought out by the Marcy Tool Works, Putnam, Conn. The blades are made of electrically heat-treated alloy steel. Handles are ebony finished with nickel-plated ferrules. The blade lengths are $1\frac{1}{2}$, 2, 3 and $3\frac{1}{2}$ in.

The K-D Valve Lifter, made by the K-D Manufacturing Co., Philadelphia, was especially designed for use in repairing Studebaker cars. The parallel jaws lift the spring free and clear without any binding or slipping. The orange lock automatically holds the spring at any desired height, giving the operator free use of both hands.

SQUEEKS & RATTLES

"NO," says the optimist, "we don't have cold winters any more."

No—not any more. If it was any more than it is, it would break all the thermometers, getting out the bottom.

It's a good thing, though, that some guys can be so pleasant about things. Cab drivers, however, will let you in on a secret or two regarding cold winters.

If a fellow goes out to get drunk these days, he's got to figure on eight hours to sober up and sixteen to thaw out.

When you throw a shovel full of coal in the furnace, there's a gulp, a cloud of smoke and then the icicles drip off the flames.

IN "raving" about the used car problem, Charles H. Emmons, Maxwell and Chalmers dealer at Ashtabula, Ohio, says that if he were a little more brilliant or capable, he might have a used car problem. The solution, then, is be thick-headed.

THICK-HEADED people don't know enough to want to solve a problem and therefore avoid all possibility of meeting with one.

WE know at least fifty-six dealers who wish they had a little of Emmons' thick-headedness.

THE rest wish they never had a head at all.

HE says he refuses to consider the used car seriously.

IN fact, he won't consider some of them in any light.

THERE is only one way to get around the used car evil—if it gets to be a problem, there is no solution but there is a way to avoid it and Emmons has learned the way. Here it is, in his own words, "Don't overstock with anything, whether it is new or used and buy your used cars right or not at all."

Then and Now

The souse who used to beat up the wife and kids
Is the fellow who now beats up the road and skids.

When I Pass On

By "Kay Em" Roberts

When I pass on and leave this sphere, whereon for forty years I've dwelt, I crave no roses at my bier nor tear drops on my brow to pelt. I came to life long, long ago and since have tried to walk the lane with no digressions to and fro to cause my earth companions pain. I'm well today and going strong, with both my coattails in the air, and I expect to sail along for years to come, sans irksome care. But I have seen some dreary times when, years ago, I had the flu; then I could hear the well known chimes that tell a guy his journey's through. But in those days no friends of mine dropped in to ask me how it went nor brought to me a slug of wine—nobody seemed to care a cent. And so, today, I sing my song and tell the world I'm all O. K., but if tonight I pass along to tread the dark and unknown way, I can't forget the erring tribe who quite forgot me in my woe, and so it is that I prescribe, "No flowers, please, where ere I go."

I suppose you have heard Jack Nelson, the announcer at the Drake station WDAP, sing his ditty, "I've Got a Song for Sale That My Sweetie Turned Down." Now they have a parody on it, "I've Got a Car for Sale That Warshawsky Turned Down." —EDJ.

'Nough Sed

Said the intake, "I've troubles manifold,"

Said the wheel, "I am very tired,"

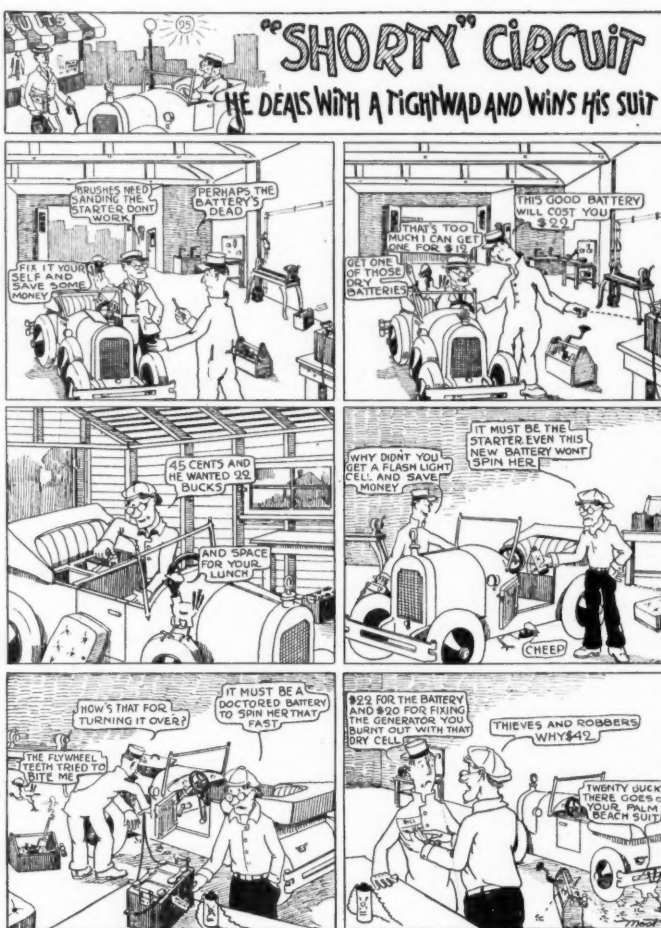
Said the gas, "I'm all burnt and exhausted, too,"

Said the spark plug, "I've just been fired."

HAP.

Physiology Note

"This trunk is now being considered as an essential part of the body."



WE wish to correct a statement made in an adjacent item—there is a solution of the used car problem—the sheriff solves it every day.

OR, if they have another earthquake, send them there.

NO one will know then, but what Mother Nature did the damage.

THEM'S our sentiments, too.

A PARTY of Americans having Thanksgiving dinner in London wanted to beat up the hotel management when pumpkin pie was served with crust on it. That ain't nothing. Didja ever see the special bodies for Fords they manufacture in Liverpool?

IT seems like we never will be able to educate the English to a thorough understanding of what we want.

"THE drinks are on me," said the cheerful idiot, as the wheels of the brewery truck stopped on his neck.—NU-ONE.

"SANTA Hangs 600 Per Cent Dividend on Jordan Tree"—some guys have all the luck.

A Poor Business Man

This sign appears on a Missouri road:

Dangerous Curve Ahead Slow Down
Steele Undertaking Co.

A Howl for Help

Help!
Help!
Help!

Fable—(?)

Once there was a gas saving device inventor, who, when he had finished his brain child, admitted that it was not the greatest advance in automotive engineering since the self-starter.—Jinx.

This inventor was committed to the state hospital for the insane.

Fer the luvva Mike, take down the Christmas decorations
LEW BRICATION.

Current Motor Truck Specifications

(This list comprises trucks distributed on a national basis)

MAKE AND MODEL	Tons Capacity	Price	ENGINE		Clutch Make	Gearset Make	REAR AXLE		TIRES	
			Make & Model	Bore & Stroke			Make & Model	Final Drive	Front	Rear
Acme.....20	34-1		Co-N.....3 1/2x5	B&B.....Cot.	Ti-6250..	WO.....34x5n	34x5n			
Acme.....30	1-1 1/2		Co-J4.....3 1/2x5	B&B.....Cot.	Ti-6352..	WO.....34x3 1/2	34x5			
Acme.....40	1 1/2-2		Co-J4.....3 1/2x5	B&B.....Cot.	Ti-6480..	WO.....34x3 1/2	34x5			
Acme.....60	2 1/2-3		Co-K1.....4 1/2x5 1/2	B&B.....Cot.	Ti-6560..	WO.....36x4	36x7			
Acme.....90	3 1/2-4 1/2		Co-L1.....4 1/2x5 1/2	B&B.....Cot.	Ti-6660..	WO.....36x5	40x12			
Acme.....125	5-6 1/2		Co-B5.....4 1/2x6	B&B.....Cot.	Ti-6760..	WO.....36x6	40x12			
Amer. La France	2 1/2	\$3950	Own.....4 1/2x6	Own.....Own.	Own.....	WO.....36x5	36x7			
Amer. La France	3 1/2	4950	Own.....4 1/2x6	Own.....Own.	Own.....	WO.....36x5	36x7			
Amer. La France	5	5500	Own.....4 1/2x6	Own.....Own.	Own.....	WO.....36x6	40x6			
Armleder.....21	1 1/2		Bu-UTU.....4 1/2x5 1/2	Ful.....Ful.	Ti-6160..	WO.....34x3 1/2	34x5n			
Armleder.....HWB	2 1/2		Bu-HTU.....4 1/2x5 1/2	Ful.....Ful.	Ti-6560..	WO.....36x4	36x4dk			
Armleder.....HWC	3 1/2		Co-CL.....4 1/2x5 1/2	B-L.....B-L.	Ti-6560..	WO.....36x4	36x4dk			
Armleder.....KWB	3 1/2		Bu-YTU.....4 1/2x6	B-L.....B-L.	Ti-6660..	WO.....36x5	36x5dk			
Armleder.....KWC	3 1/2		Co-EL.....4 1/2x5 1/2	B-L.....B-L.	Ti-6660..	WO.....36x5	36x5dk			
Atterbury.....20R	1 1/2-2	2475	Co-J4.....3 1/2x5	Ful.....Ful.	Ti-6160..	WO.....34x4	34x5n			
Atterbury.....22C	2 1/2-3	3375b	Co-K4.....4 1/2x5 1/2	B-L.....B-L.	Ti-6560..	WO.....36x1k	36x4dk			
Atterbury.....22D	3 1/2-4	4275b	Co-L1.....4 1/2x5 1/2	B-L.....B-L.	Ti-6660..	WO.....36x5	40x6d			
Atterbury.....25E	5-6	4975b	Co-B2.....4 1/2x6	B-L.....B-L.	Ti-6760..	WO.....36x6	40x7d			
Autocar.....21	1 1/2-2	2200i	Own.....4 1/2x4 1/2	Own.....Own.	DIR.....	DIR.....34x4	34x6			
Autocar.....27	3	3450i	Own.....4 1/2x5 1/2	Own.....Own.	DIR.....	DIR.....34x5	36x8			
Autocar.....26	1-6	4650i	Own.....4 1/2x5 1/2	Own.....Own.	DIR.....	DIR.....34x6	36x12			
Available.....HJ	1 1/2	2450	Ho-O.....4x5	B-L.....B-L.	Ti-6160..	WO.....36x3 1/2	36x5			
Available.....HJ	1 1/2	3180	Ho-O.....4x5	B-L.....B-L.	Ti-6560..	WO.....36x4	36x8			
Available.....HJ	1 1/2	4175	Ho-MU3	4 1/2x5 1/2	B-L.....B-L.	Ti-6660..	WO.....36x5	40x5d		
Available.....HJ	1 1/2	5375	Ho-T3.....5x6	B-L.....B-L.	Ti-6760..	WO.....36x6	40x12			
Avery.....1-1 1/4			Own.....3x4	Own.....Own.	To-0X2..	IG.....34x5n	34x5n			
Bessemer.....G1	1450		Co-N.....3 1/2x5	Ful.....Ful.	To-A.....	IG.....35x5n	35x5n			
Bessemer.....H2	1 1/2	1995	Co-N.....3 1/2x5	B&B.....Bak.	LM-7150	DR.....36x3 1/2	36x5			
Bessemer.....J2	2 1/2	2895	Co-C2.....4 1/2x5 1/2	B&B.....B-L.	LM-7250	DR.....36x4	36x4dk			
Bessemer.....K2	3 1/2	3495	Co-E7.....4 1/2x5 1/2	B&B.....B-L.	To-E.....	IG.....36x5	36x10			
Bethlehem.....KN	1385		Own.....3 1/2x5	B&B.....Det.	Ea-1000..	SB.....35x5n	35x5n			
Bethlehem.....GN	2185		Own.....4 1/2x5 1/2	B&B.....Det.	Wi-60A..	DR.....34x4	34x6			
Bethlehem.....HN	3	2985	Own.....4 1/2x5 1/2	Ful.....Ful.	Wi-88E..	DR.....36x1	36x8			
Brookway.....E2	1 1/2		Wi-SU.....4x5	B-L.....B-L.	Co-52001	SB.....33x5n	33x5n			
Brookway.....S	1 1/2		Wi-SU.....4x5	B-L.....B-L.	Ti-6160..	WO.....36x4	36x6			
Brookway.....K	2 1/2		Co-K4.....4 1/2x5 1/2	B-L.....B-L.	Ti-6560..	WO.....36x1	36x8			
Brookway.....R	3 1/2		Co-L1.....4 1/2x5 1/2	B-L.....B-L.	Ti-6660..	WO.....36x5	36x5dk			
Brookway.....T	5		Co-B5.....4 1/2x6	B-L.....B-L.	Ti-6760..	WO.....36x6	40x7d			
Buick.....23-4-SD	34	945	Own.....3 1/2x4 1/2	Own.....Own.	SB.....	31x4n	31x4n			
Case.....TR	3		Own.....4 1/2x5 1/2	TD.....	To-CL39..	IG.....36x6n	38x7n			
Chevrolet.....Supr	3	395	Own.....3 1/2x4 1/2	Own.....Own.	SB.....30x3 1/2	30x3 1/2	30x3 1/2			
Chevrolet.....Utl	550		Own.....3 1/2x4 1/2	Own.....Mun.	SB.....	31x4n	34x4 1/2			
Clinton.....20	1-1 1/4	1980	Bu-WTU.....3 1/2x5	B-L.....B-L.	Ti-6250..	WO.....31x5n	31x5n			
Clinton.....45	1 1/2-2	2810	Bu-GTU.....3 1/2x5	B-L.....B-L.	Ti-6160..	WO.....31x4	31x3 1/2			
Clinton.....65	2 1/2-3	3480	Bu-ETU.....4 1/2x5 1/2	B-L.....B-L.	Ti-6560..	WO.....34x5	34x5dk			
Clinton.....90	3 1/2-4 1/2	4160	Bu-YTU.....4 1/2x6	B-L.....B-L.	Ti-6660..	WO.....36x6	36x6dk			
Clinton.....120	5-7	4890	Bu-BTU.....5 1/2x6	B-L.....B-L.	Ti-6760..	WO.....36x6	36x7d			
Clydesdale.....10A	1 1/2	1785	Co-N.....3 1/2x5	B&B.....B-L.	Ti-6250..	SB.....34x5n	34x5n			
Clydesdale.....8	2 1/2	2650	Co-K4.....4 1/2x5 1/2	B-L.....B-L.	Ti-6160..	WO.....36x4	36x7			
Clydesdale.....6	3 1/2	3300	Co-L1.....4 1/2x5 1/2	B-L.....B-L.	Ti-6560..	WO.....36x5	36x5dk			
Clydesdale.....4	5	4200	Co-B5.....4 1/2x6	B-L.....B-L.	Ti-6660..	WO.....36x6	40x6d			
Clydesdale.....2	6-7	4500	Co-B5.....4 1/2x6	B-L.....B-L.	Ti-6760..	WO.....36x6	40x7d			
Commerce.....9-14-114			Co-N.....3 1/2x5	Det.....Det.	Sa-D16..	SB.....33x5n	33x5n			
Commerce.....14	1 1/2		Co-J4.....3 1/2x5	B-L.....B-L.	Ti.....	WO.....36x3 1/2	36x5k			
Commerce.....25	2 1/2		Co-K4.....4 1/2x5 1/2	B-L.....B-L.	Ti-6560..	WO.....36x4	36x7k			
Corbitt.....E1	3 1/2		HS-30.....3 1/2x5	B-L.....B-L.	Sh-1002..	WO.....34x4 1/2	34x4 1/2			
Corbitt.....C1	1 1/2		Co-N.....3 1/2x5	B-L.....B-L.	Sh-1002..	WO.....34x3 1/2	34x3 1/2			
Corbitt.....C2	2 1/2		Co-K4.....4 1/2x5 1/2	B-L.....B-L.	Sh-1501..	WO.....34x3 1/2	34x3 1/2			
Corbitt.....B2	3 1/2		Co-J4.....3 1/2x5	B-L.....B-L.	Sh-103..	WO.....36x3 1/2	36x7k			
Corbitt.....R3	3 1/2		Co-K4.....4 1/2x5 1/2	B-L.....B-L.	Sh-21.....	WO.....36x4	36x8			
Corbitt.....AA5	4		Co-B5.....4 1/2x6	Del.....Del.	Sh-51.....	WO.....36x5	40x12			
Day-Elmer.....AN	1 1/2		Bu-WTU.....3 1/2x5	B-L.....B-L.	Ti-6352..	WO.....34x3 1/2	34x4			
Day-Elmer.....BN	2 1/2		Co-J4.....3 1/2x5	B-L.....B-L.	Ti-6480..	WO.....34x3 1/2	34x5			
Day-Elmer.....DN	3 1/2		Co-K4.....4 1/2x5 1/2	B-L.....B-L.	Ti-6560..	WO.....36x1	36x7			
Day-Elmer.....CN	3 1/2		Bu-HTU.....4 1/2x5 1/2	B-L.....B-L.	Ti-6560..	WO.....36x4	36x8			
Day-Elmer.....FN	1 1/2		Co-L1.....4 1/2x5 1/2	B-L.....B-L.	Ti-6660..	WO.....36x5	36x5dk			
Day-Elmer.....EN	5-6		Bu-YTU.....4 1/2x6	B-L.....B-L.	Ti-6760..	WO.....36x5	40x6d			
Dearborn.....E1	1600i		Bu-Mu.....3 1/2x5	Ful.....Ful.	Wi.....	WO.....35x5n	35x5n			
Dearborn.....F1	1980i		Bu-WU.....3 1/2x5	Ful.....Ful.	Wi.....	WO.....31x4	34x5			
Dearborn.....A2	2390		Bu-WU.....3 1/2x5	Ful.....Ful.	Wi.....	WO.....34x4 1/2	34x7			
Denby.....31	1 1/4-1 1/2	1185	Co-N.....3 1/2x5	Ful.....Ful.	Cl-B3000	SB.....31x5n	34x5n			
Denby.....33	2375		Co-J4.....3 1/2x5	Ful.....Ful.	Cl-1D.....	IG.....35x5n	38x7n			
Denby.....35	2975		Co-K4.....4 1/2x5 1/2	Ful.....Ful.	Cl-2D.....	IG.....36x1	36x8			
Denby.....27	3695		Co-L1.....4 1/2x5 1/2	Ful.....Ful.	Cl-3D.....	IG.....36x5	36x5dk			
Denby.....2105	4205		Co-B5.....4 1/2x6	Ful.....Ful.	Cl-5D.....	IG.....36x6	40x6d			
Denby.....2147	4945		Co-B5.....4 1/2x6	Ful.....Ful.	Ru.....	IG.....36x6	40x14			
Dependable.....CD	1 1/2-2	2350	Bu-CTU.....3 1/2x5 1/2	Ful.....Ful.	Wi-300J..	WO.....31x5	31x8			
Dependable.....EG	2 1/2-3	2950	Bu-ETU.....3 1/2x5 1/2	Ful.....Ful.	Wi-900C..	WO.....36x5	36x10			
Diamond T.....03	1-1 1/4		Hi-700.....4x5	Cov.....Cov.	Co-52021	SB.....33x5n	33x5n			
Diamond T.....T1	1 1/2		Hi-700.....4x5 1/2	Cov.....Cov.	Own.....	WO.....36x3 1/2	36x4			
Diamond T.....U2	1 1/2		Hi-1400..	4 1/2x5 1/2	Cov.....Cov.	Ti-6160..	WO.....36x3 1/2	36x5		
Diamond T.....U3	3 1/2		Hi-1500..	4 1/2x5 1/2	Cov.....Cov.	Ti-6560..	WO.....36x4	36x8k		
Diamond T.....EL5	5		Hi-200.....4 1/2x5 1/2	Cov.....Cov.	Ti-6660..	WO.....36x5	36x5dk			
Diamond T.....S	5		Hi-B2.....4 1/2x6	B-L.....B-L.	Ti-6760..	WO.....36x6	40x6d			
Dodge Brothers.....34	730		Own.....3 1/2x4 1/2	Own.....Own.	SB.....	32x4n	32x4n			
Dorris.....K2	1	\$2490	Own.....4x5 1/2	Own.....Own.	War.....	Ti-5512..	IG.....33x5n	33x5n		
Dorris.....K4	2 1/2	3100	Own.....4 1/2x5 1/2	Own.....Own.	War.....	Ti-5560..	WO.....36x4	36x7		
Dorris.....K7	3 1/2	1400	Own.....4 1/2x5 1/2	Own.....Own.	War.....	Ti-6660..	WO.....36x7	36x10		
Dort.....100	685b		Ly-K.....3 1/2x5	Del.....Del.	Own.....	Fi-105..	SB.....31x4n	31x4n		
Duplex.....G1	1 1/2		Bu-WTU.....3 1/2x5 1/2	B-L.....B-L.	Ti-5511..	SB.....33x5	33x5n			
Duplex.....GH	1 1/2		Bu-WTU.....3 1/2x5 1/2	Cov.....Cov.	Sh-1501..	WO.....35x5	35x5n			
Duplex.....A2	2 1/2-3		Hi-400.....4x5 1/2	Cov.....Cov.	Sh-103..	WO.....35x5n	38x7n			
Duplex.....AC	2 1/2-3		Hi-400.....4x5 1/2	B-L.....B-L.	Vu-4.....	WO.....34x5	36x8			
Duplex.....E3	3 1/2		Bu.....4 1/2x5 1/2	B-L.....B-L.	Own.....	IG.....36x8	36x8			
F.W.D.....B3	4200		Wi-A.....4 1/2x5 1/2	H-S.....Cot.	Own.....	SP.....36x4	36x6			
Fagel.....1 1/2	3000		Wa-YA.....3 1/2x5 1/2	B-L.....B-L.	Own.....	Ti-6461..	WO.....34x3 1/2	34x6		
Fagel.....2 1/2	3900		Wa-CU.....4 1/2x5 1/2	B-L.....B-L.	Own.....	Ti-6560..	WO.....34x4k	36x7		
Fagel.....4	5000		Wa-DU.....4 1/2x6 1/2	B-L.....B-L.	Own.....	Ti-6660..	WO.....36x5	36x5dk		
Fagel.....6	5700		Wa-DU.....4 1/2x6 1/2	B-L.....B-L.	Own.....	Ti-6760..	WO.....36x6	40x6d		
Federal.....R2	1 1/2		Co-J4.....3 1/2x5	B&B.....Det.	Ti-6250..	WO.....33x5n	33x5n			
Federal.....S-23	1 1/2		Co-J1.....3 1/2x5	B&B.....Own.	Ti-6460..	WO.....36x3 1/2	36x5			
Federal.....U2	2 1/2-4		Co-K4.....4 1/2x5 1/2	B&B.....Det.	Ti-6560..	WO.....36x4	36x8			
Federal.....W2	3 1/2-4		Co-L1.....4 1/2x5 1/2	B&B.....War.	Ti-6660..	WO.....36x5	40x5d			
Federal.....X2	5-6		Co-B5.....4 1/2x6	B&B.....War.	Ti-6760..	WO.....36x6	40x6d			
Ford.....T1	370		Own.....30x3 1/2	Own.....Own.	WO.....30x3 1/2	32x4 1/2	32x4 1/2			
G.M.C.....K16	1		Own.....3 1/2x5 1/2	Own.....Own.	Own.....	SB.....34x5n	34x5n			
G.M.C.....K41	2		Own.....4x5 1/2	Own.....Own.	Ti-6560..	WO.....36x4	36x7			
G.M.C.....K41	5		Own.....4x5 1/2	Own.....Own.	Ti-6560..	WO.....36x4	36x8			
G.M.C.....K71	3 1/2		Own.....4 1/2x6	Own.....Own.	Ti-6660..	WO.....36x5	40x5d			
G.M.C.....K71	10		Own.....4 1/2x6	Own.....Own.	Ti-6660..	WO.....36x5	40x12			
G.M.C.....K101	5		Own.....4 1/2x6	Own.....Own.	Ti-6760..	WO.....36x5	40x6d			
G.M.C.....K101	15		Own.....4 1/2x6	Own.....Own.	Ti-6760..	WO.....36x5	40x14			
Garford.....151	1590		Bu-MU.....3 1/2x5 1/2	B&B.....Own.	Ti-6250..	WO.....34x5n	34x5n			
Garford.....25B	1 1/2	2375	Bu-WU.....3 1/2x5 1/2	Own.....Own.	Ti-6460..	WO.....36x3 1/2	36x5			
Garford.....70H	2 1/2	3250	Bu-HTU.....4 1/2x5 1/2	Own.....Own.	Ti-6560..	WO.....36x4	36x8			
Garford.....80	4200		Bu-YTU.....4 1/2x6	Own.....Own.	Ti-6660..	WO.....36x5	36x5dk			

Current Motor Truck Specifications—Continued

(This list comprises trucks distributed on a national basis)

MAKE AND MODEL	Tons Capacity	Price	ENGINE		Clutch Make	Gearset Make	REAR AXLE		TIRES		MAKE AND MODEL	Tons Capacity	Price	ENGINE		Clutch Make	Gearset Make	REAR AXLE		TIRES	
			Make & Model	Bore & Stroke			Make & Model	Final Drive	Front	Rear				Make & Model	Bore & Stroke			Make & Model	Final Drive	Front	Rear
Kissel	4	\$3625	Ow.	4 1/2 x 5 1/2	War.	War.	Sh-31	WO.	36x5	36x12	Schacht	5	\$1600	Wi-VAU	4 1/2 x 6	B&B.	Ow.	Ow.	WO.	36x5	40x7d
Larrabee	X2	1785	Co-8L	3 3/4 x 4 1/2	B-L.	B-L.	Sh-1480	SB.	34x5n	34x5n	Selden	30C	2375	Co-J4	3 3/4 x 5	B-L.	B-L.	Ti.	WO.	34x3 1/2	34x5k
Larrabee	J4	2100	Co-J4	3 3/4 x 5	B-L.	B-L.	Sh-1501	WO.	34x3 1/2	34x5k	Selden	50B	3250	Co-K4	4 1/2 x 5 1/2	B-L.	B-L.	Ti.	WO.	36x4k	36x7k
Larrabee	K5	3550	Co-L4	4 1/2 x 5 1/2	B-L.	B-L.	Sh-22	WO.	36x4	36x8	Selden	53B	3550	Co-L4	4 1/2 x 5 1/2	B-L.	B-L.	Ti.	WO.	36x4k	36x7k
Larrabee	L4	4100	Co-L4	4 1/2 x 5 1/2	B-L.	B-L.	Sh-31	WO.	36x5	36x10	Selden	70B	4175	Co-L4	4 1/2 x 5 1/2	B-L.	B-L.	Ti.	WO.	36x5k	36x10k
Maccar	EX		Wi-SU	4x5	B-L.	B-L.	Sh-1526	SB.	34x5n	34x5n	Selden	73B	4175	Co-B5	4 1/2 x 6	B-L.	B-L.	Ti.	WO.	36x5k	36x10k
Maccar	L-1		Wi-TAU	4 1/2 x 6	B-L.	B-L.	Ti-6460	WO.	36x4	36x6	Selden	90A5	4950	Co-B5	4 1/2 x 6	Del.	B-L.	Ti.	WO.	36x6k	40x12
Maccar	HT		Wi-TAU	4 1/2 x 6	B-L.	B-L.	Ti-6500	WO.	36x4	36x4d	Service	25		Bu-WTU	3 3/4 x 5 1/2	B-L.	B-L.	Ea-1000	SB.	34x5n	34x5n
Maccar	H-13		Wi-UAU	4 1/2 x 6	B-L.	B-L.	Ti-6500	WO.	36x4	36x5d	Service	33		Bu-GBU	4 x 5 1/2	B&B.	B-L.	Ti-6352	WO.	34x3 1/2	34x6
Maccar	M-2		Wi-VAU	4 1/2 x 6	B-L.	B-L.	Ti-6666	WO.	36x5	36x6d	Service	42		Bu-EBU	4 1/2 x 5 1/2	B&B.	B-L.	Ti-6460	WO.	36x4	36x7
Maccar	G-15		Wi-RBU	5x6	B-L.	B-L.	Ti-6760	WO.	36x6	40x6d	Service	61		Bu-FBU	4 1/2 x 5 1/2	B&B.	B-L.	Ti-6500	WO.	36x4	36x8
MacDonald	O	5500b	Bu-WTU	3 3/4 x 5 1/2	B-L.	B-L.	**Ow.	IG.	36x6	36x10	Service	81		Bu-YBU	4 1/2 x 5 1/2	B&B.	B-L.	Ti-6666	WO.	36x5	36x10
MacDonald	A-7	8000b	Bu-YTU	4 1/2 x 6	B-L.	B-L.	**Ow.	IG.	40x7	40x14	Service	103		Bu-YBU	4 1/2 x 5 1/2	B&B.	B-L.	Ti-6760	WO.	36x6	40x12
Mack	AB	3000	Ow.	4x5	Ow.	Ow.	Ow.	Ch.	36x4	36x3 1/2	Signal	NF		Co-J4	3 3/4 x 5	B-L.	B-L.	Ti-6352	WO.	34x5n	34x6n
Mack	AB	3150	Ow.	4x5	Ow.	Ow.	Ow.	Ch.	36x4	36x3 1/2	Signal	H		Co-K4	4 1/2 x 5 1/2	B-L.	B-L.	Ti-6460	WO.	34x4	36x6
Mack	AB	3300	Ow.	4x5	Ow.	Ow.	Ow.	Ch.	36x4	36x4d	Signal	J		Co-L4	4 1/2 x 5 1/2	B-L.	B-L.	Ti-6500	WO.	36x5	36x8
Mack	AB	3750	Ow.	4x5	Ow.	Ow.	Ow.	Ch.	36x4	36x4d	Signal	M5		Co-L4	4 1/2 x 5 1/2	B-L.	B-L.	Ti-6666	WO.	36x4	40x10
Mack	AB	3100	Ow.	4x5	Ow.	Ow.	Ow.	Ch.	36x4	36x4d	Signal	R		Co-B5	4 1/2 x 6	B-L.	B-L.	Ti-6760	WO.	36x6	40x12
Mack	AB	3850	Ow.	4x5	Ow.	Ow.	Ow.	Ch.	36x4	36x4d	Signal	R		Co-N	3 3/4 x 5	B-L.	B-L.	Ti-6250	WO.	33x5n	33x5n
Mack	AC	4950	Ow.	5x6	Ow.	Ow.	Ow.	Ch.	36x5	40x5d	Standard	75	13301	Co-N	3 3/4 x 5	B-L.	B-L.	Ti-6352	WO.	34x3 1/2	34x5
Mack	AC	5500	Ow.	5x6	Ow.	Ow.	Ow.	Ch.	36x6	40x6d	Standard	15K	2795	Co-K4	4 1/2 x 5 1/2	B-L.	B-L.	Ti-6500	WO.	36x4	36x8
Mack	AC	5750	Ow.	5x6	Ow.	Ow.	Ow.	Ch.	36x6	40x12	Standard	25K	3615	Co-L4	4 1/2 x 5 1/2	B-L.	B-L.	Ti-6666	WO.	36x5	36x12
Mack	AC	6000	Ow.	5x6	Ow.	Ow.	Ow.	Ch.	36x7	40x7d	Standard	35K	4495	Co-B5	4 1/2 x 6	B-L.	B-L.	Ti-6760	WO.	36x6	40x14
Mack	AB5	3100	Ow.	4 1/2 x 5	Ow.	Ow.	Ow.	Ch.	36x4	36x4d	Star	5	405	Co-Spec	3 1/2 x 4 1/2	Ow.	War.	Ti-Spec	SB.	30x3 1/2	30x3 1/2
Mack	AC7	4950	Ow.	5x6	Ow.	Ow.	Ow.	Ch.	36x5	40x5d	Sterling	1	3240	Wa-FU	4 1/2 x 5 1/2	B-L.	B-L.	Ti-6460	WO.	36x3 1/2	36x5k
Mack	AC10	5500	Ow.	5x6	Ow.	Ow.	Ow.	Ch.	36x6	40x6d	Sterling	2	3440	Wa-FU	4 1/2 x 5 1/2	B-L.	B-L.	Ti-6500	WO.	36x4k	36x6k
Mack	AC13	5750	Ow.	5x6	Ow.	Ow.	Ow.	Ch.	36x6	40x12	Sterling	3	3700	Wa-CU	4 1/2 x 5 1/2	B-L.	B-L.	Ti-6500	WO.	36x4k	36x4dk
Mack	AC15	6000	Ow.	5x6	Ow.	Ow.	Ow.	Ch.	36x7	40x7d	Sterling	4	4750	Wa-DU	4 1/2 x 5 1/2	H-S.	Ow.	Ti-6666	WO.	36x5	40x5d
Mason	11	1295	He.	4 1/2 x 5	Hoo.	War.	FL	SB.	34x5n	34x5n	Sterling	5	5400	Wa-EU	5x6 1/2	H-S.	Ow.	Ti-6760	WO.	36x6	40x6d
Master	11		Bu-WTU	3 3/4 x 5 1/2	Ful.	Ful.	Ti-5511	SB.	33x5n	33x5n	Sterling	6	6000	Wa-EU	5x6 1/2	H-S.	Ow.	Ow.	Ch.	36x6	40x6d
Master	21		Bu-OU	4 1/2 x 5 1/2	Ful.	Ful.	Ti-6460	WO.	34x4	34x6	Sterling	7	6500	Wa-EU	5x6 1/2	H-S.	Ow.	Ow.	Ch.	36x6	40x7d
Master	41		Bu-ETU	4 1/2 x 5 1/2	Ful.	Ful.	Ti-6500	WO.	34x4	36x8	Stewart	16	1095	Ly-CT	3 3/4 x 5	Ful.	CI-AW	IG.	35x5n	35x5n	
Master	51		Bu-YTU	4 1/2 x 6	B-L.	B-L.	Ti-6666	WO.	36x5	40x10	Stewart	15-K	1870	Co-N	3 3/4 x 5 1/2	Ful.	CI-1D	IG.	34x3 1/2	34x6k	
Master	61		Bu-YTU	4 1/2 x 6	B-L.	B-L.	Ti-6760	WO.	36x5	40x12	Stewart	9	2590	Bu-HU	4 1/2 x 5 1/2	Ful.	CI-2D	IG.	34x4k	34x8k	
Master	64		Bu-ATU	4 1/2 x 6 1/2	B-L.	B-L.	Ti-6760	WO.	36x6	40x14	Stewart	7K	3440	Bu-YTU	4 1/2 x 5 1/2	Ful.	CI-3D	IG.	36x5	36x12	
Maxwell	5	1097	Ow.	3 3/4 x 4 1/2	Ow.	Ow.	Ti.	WO.	35x5n	35x5n	Stewart	10X	3150	Co-N	3 3/4 x 5 1/2	Ful.	CI-3D	IG.	36x5	36x12	
Menominee	B1	1650	Wi-SU	4x5	B&B.	Det.	Co-5200	SB.	35x5n	35x5n	Stoughton	AS	1185	Co-N	3 3/4 x 5 1/2	Ful.	CI-4D	IG.	36x5	36x12	
Menominee	HT	2000	Wi-CAU	3 3/4 x 5	Ful.	Del.	Wi-800G	WO.	34x3 1/2	36x5k	Stoughton	AS	2100	Co-N	3 3/4 x 5 1/2	Ful.	CI-5D	IG.	36x5	36x12	
Menominee	H1	2175	Wi-EAU	4x5	Ful.	Del.	Wi-800H	WO.	34x3 1/2	36x5k	Stoughton	B1	2150	Co-N	3 3/4 x 5 1/2	Ful.	CI-6D	IG.	36x5	36x12	
Menominee	D	2875	Wi-TAU	4x6	Ful.	Del.	Wi-800J	WO.	36x4	36x8	Stoughton	D2	2190	Co-N	3 3/4 x 5 1/2	Ful.	CI-7D	IG.	36x5	36x12	
Menominee	J5	4850	Wi-RAU	4 1/2 x 6	B&B.	Det.	Ti-6760	WO.	36x6	40x12	Stoughton	F3	3150	Hi-402	4 1/2 x 5 1/2	B-L.	B-L.	Sh-21	WO.	36x5	36x5d
Moline	10	1695	Ow.	3 1/2 x 5	B&B.	Ow.	To-A	IG.	34x5n	36x6n	Thomast	20	1795	Hi-400	4 1/2 x 5 1/2	War.	War.	Ea-1000	SB.	34x5n	34x5n
Nash	2018	1595	Ow.	3 1/2 x 5	B&B.	Det.	CI-1D	IG.	34x4	34x5	Tiffin	GW	2100	Co-C1	4 1/2 x 5 1/2	Ful.	Sh-103	WO.	36x3 1/2	36x5	36x5
Nash	4017F	2750	Bu-HU	4 1/2 x 5 1/2	B&B.	Ow.	Ow.	IG.	36x6	36x6	Tiffin	MW	2700	Co-C4	4 1/2 x 5 1/2	Ful.	Sh-21	WO.	36x4	36x3 1/2	
Nash	3018	2150	Ow.	3 1/2 x 5	B&B.	Det.	CI-2D	IG.	34x4	34x7	Tiffin	F35	3600	Co-L4	4 1/2 x 5 1/2	Del.	Co-	Sh-31	WO.	36x5	40x5d
Nash	5018	2250	Ow.	3 1/2 x 5	B&B.	Det.	CI-2D	IG.	34x4	34x7	Tiffin	TW	4500	Co-B2	4 1/2 x 6	B&B.	Cot.	Sh-51	WO.	36x6	40x6d
Noble	A-75	1395	Bu-WTU	3 3/4 x 5 1/2	Ful.	Ful.	CI-300	SB.	31x4 1/2	31x4 1/2	Tiffin	UW	4500	Co-B2	4 1/2 x 6	B&B.	Cot.	Sh-51	WO.	36x6	40x12
Noble	A-21	1890	Bu-WTU	3 3/4 x 5 1/2	Ful.	Ful.	Sh-1501	WO.	34x5	34x5	Titan	5	2700	Bu-HU	4 1/2 x 5 1/2	B&B.	Cot.	Ow.	DR.	36x4	36x8
Noble	B-31	2995	Bu-CTU	3 3/4 x 5 1/2	Ful.	Ful.	Sh-103	WO.	36x4	36x7	Titan	5	3000	Bu-YTU	4 1/2 x 5 1/2	B&B.	Cot.	Ow.	DR.	36x5	40x10
Noble	D-51	3150	Bu-ETU	4 1/2 x 5 1/2	Ful.	Ful.	Sh-21	WO.	36x4	36x8	Titan	5	4100	Bu-YTU	4 1/2 x 5 1/2	B&B.	Cot.	Ow.	DR.	36x5	40x12
Noble	E-71	3850	Bu-YTU	4 1/2 x 5 1/2	Ful.	War.	Sh-30	WO.	36x5	36x10	Titan	5	4100	Bu-YTU	4 1/2 x 5 1/2	B&B.	Cot.	Ow.	DR.	36x5	40x12
Old Reliable	B	3500	Wi-UAU	4 1/2 x 6	Ful.	Ful.	Sh-21	WO.	36x4	36x8	Titan	5	4100	Bu-YTU	4 1/2 x 5 1/2	B&B.	Cot.	Ow.	DR.	36x5	40x12
Old Reliable	C	4250	Wi-VAU	4 1/2 x 6	Ful.	Ful.	Sh-31	WO.	36x5	36x12	Titan	5	4100	Bu-YTU	4 1/2 x 5 1/2	B&B.	Cot.	Ow.	DR.	36x5	40x12
Old Reliable	D5	5000	Wi-RAU	4 1/2 x 6	Ow.	B-L.	Sh-51	WO.	36x6	4											

Current Motor Truck Specifications—Continued

(This list comprises trucks distributed on a national basis)

CANADIAN

MAKE AND MODEL	Tons Capacity	Price	ENGINE		Clutch Make	Gearset Make	REAR AXLE		TIRES		MAKE AND MODEL	Tons Capacity	Price	ENGINE		Clutch Make	Gearset Make	REAR AXLE		TIRES	
			Make & Model	Bore & Stroke			Make & Model	Final Drive	Front	Rear				Make & Model	Bore & Stroke			Make & Model	Final Drive	Front	Rear
Gotfredson...20	1/2-1	\$2275	Bu-WTU	3 3/4 x 5 1/2	B-L	B-L	Ti-6250	WO.	34x5n	34x5n	National...FA1	\$2450	Wa-BUX	3 3/4 x 5 1/2	B-L	B-L	Ti-6352	WO.	35x5n	35x5n	
Gotfredson...40	1 1/2-2	3290	Bu-GTU	4 1/2 x 5 1/2	B-L	B-L	Ti-6460	WO.	36x6n	36x7n	National...GA	2750	Wa-BUX	3 3/4 x 5 1/2	B-L	B-L	Ti-6460	WO.	34x4k	34x6k	
Gotfredson...50	2 1/2	3775	Bu-ETU	4 1/2 x 5 1/2	B-L	B-L	Ti-6560	WO.	36x4	36x8	National...HD	3750	Wa-CU	4 1/2 x 5 1/2	H-S	B-L	Ti-6560	WO.	36x5	36x10	
Gotfredson...80	4	4775	Bu-YTU	4 1/2 x 5 1/2	B-L	B-L	Ti-6666	WO.	34x5	36x12	National...NB	4750	Wa-DU	4 1/2 x 5 1/2	H-S	B-L	Ti-6666	WO.	36x6	36x12	
Gotfredson...100	5	5800	Bu-BTU	5 1/2 x 5 1/2	B-L	B-L	Ti-6760	WO.	36x6	40x14	National...OA5	6150	Wa-EU	5 1/2 x 5 1/2	H-S	B-L	Ti-6760	WO.	36x6	40x14	
Mapleleaf...1 1/2		3000	Hi-300	3 3/4 x 5 1/2	Ful.	Ful.	Sh-1501	WO.	34x5n	36x6n	Veteran...M1 1/2	2699	Bu-CTU	3 3/4 x 5 1/2	B&B	Cot.	Sh-1501	WO.	34x5n	34x5n	
Mapleleaf...AA2		3600	Hi-400	4 1/2 x 5 1/2	Ful.	Ful.	Sh-103	WO.	36x4	36x7	Veteran...P2	3699	Bu-HTU	4 1/2 x 5 1/2	B&B	Cot.	Sh	WO.	36x4	36x7	
Mapleleaf...BB3		4050	Hi-500	4 1/2 x 5 1/2	Ful.	Ful.	Sh-21	WO.	36x4	36x4d	Veteran...R3	4200	Bu-HTU	4 1/2 x 5 1/2	B&B	Cot.	Sh-21	WO.	36x4	36x7	
Mapleleaf...CC4		4800	Hi-200	4 1/2 x 5 1/2	Ful.	Ful.	Sh-31	WO.	36x5	36x5d	Veteran...S4	5395	Bu-YTU	4 1/2 x 5 1/2	B&B	Cot.	Sh-31	WO.	36x5	36x10	
Mapleleaf...DD5		5625	Hi-1600	4 1/2 x 5 1/2	Ful.	Ful.	Sh-51	WO.	36x6	36x6d											

Current Tractor Specifications

MAKE & MODEL	Drawbar-Pulley Rating	Recommended No. of 14 Ins. Plovs	Price	ENGINE				Traction Members, Dimension, Diameter & Face (Ins.)	MAKE & MODEL	Drawbar-Pulley Rating	Recommended No. of 14 Ins. Plovs	Price	ENGINE				Traction Members, Dimension, Diameter & Face (Ins.)						
				Make	No. of Cyls. Bore & Stroke	Weight (Lbs.)	†Traction Members, Dimension, Diameter & Face (Ins.)						Make	No. of Cyls. Bore & Stroke	Weight (Lbs.)	†Traction Members, Dimension, Diameter & Face (Ins.)							
Allis-Chalmers...	6-12	1	\$325	LeR.	4-3 1/2 x 4 1/2	2500	48x6	Gray.....EU	22-40	4	2385	Wau.	4-5 x 6 1/2	6900	†	Rumely OilPull..E	30-60	8-10	Own.	2-10x12	26000	80x30	
Allis-Chalmers...	15-25	3	1285	Mid.	4-4 1/2 x 5 1/2	4700	46x12	Hart-Parr.....20	-20	2	Own.	2-5 1/2 x 6 1/2	4250	46x10	Russell.....	15-30	3-4	Ch.	4-5 x 6 1/2	6900	56x14		
Allis-Chalmers...	20-35	4	1885	Own.	4-4 1/2 x 6 1/2	6150	50x12	Hart-Parr.....30	-30	3	Own.	2-6 1/2 x 7	5220	52x10	Russell.....	20-40	4-5	Ch.	4-5 1/2 x 7	7900	60x16		
Allwork.....D	20-38	4-5	1695	Own.	4-5 x 7	6500	48x14	Hart-Parr.....(Road)	-30	3	Own.	2-6 1/2 x 7	7560	52x18	Russell.....	30-60	8-10	Own.	4-8 x 10	22550	84x22		
Allwork.....G	14-28	3	1495	Own.	4-4 1/2 x 6	4800	48x12	Hart-Parr.....40	-40	4	Own.	4-6 1/2 x 6 1/2	7510	32x18	Shaw-Enochs (Gr.)			LeR.	4-3 1/2 x 4 1/2	4400	48x8		
Allwork.....C	16-30	3	1295	Own.	4-5 x 6	5200	48x12	Heider.....D	9-16	2	Wau.	4-4 1/2 x 5 1/2	4000	54x8	Topp-Stewart...B	30-45	4	Wau.	4-4 1/2 x 6 1/2	7800	42x12		
Aultman-Taylor...	15-30	3-4	1900	Ch.	4-5 x 6 1/2	7800	70x12	Heider.....C	12-20	3	Wau.	4-4 1/2 x 6	6000	57x10	Toro.....	6-10	2	\$675	LeR.	4-3 1/2 x 4 1/2	2900	41x9	
Aultman-Taylor...	22-45	4-6	3100	Own.	4-5 1/2 x 8	12500	70x20	Heider.....M-2	5-10	1	LeR.	4-3 1/2 x 4 1/2	2800	46x6	Townsend.....	10-20	2-3	800	Own.	2-6 1/2 x 7	4500	48x12	
Aultman-Taylor...	30-60	8-10	4400	Own.	4-7 x 9	22500	90x24	Huber.....(Light 4)	12-25	3	985	Wau.	4-4 1/2 x 5 1/2	5000	60x10	Townsend.....	15-30	3-4	1350	Own.	2-7 x 8	6500	56x18
Avery.....15	3-4			Own.	4-4 1/2 x 6	4750	50x12	Huber.....(Super 4)	15-30	3		Mid.	4-4 1/2 x 5 1/2	6000	60x10	Townsend.....	25-50	4-8	2250	Own.	2-8 1/2 x 10	11500	60x24
Avery.....20-35	4-5			Own.	4-4 1/2 x 7	7500	60x16	Lauson.....S	12-25	3		Mid.	4-4 1/2 x 5 1/2	4200		Traylor.....	6-12	1	500	LeR.	4-3 1/2 x 4 1/2	1750	38x10
Avery.....25-50	5-6			Own.	4-6 1/2 x 7	12500	69x20	Lauson.....T	15-30	4		Bea.	4-4 1/2 x 6	6200		Twin City.....	12-20	3	1200	Own.	4-4 1/2 x 6	4700	50x12
Avery.....45-65	15-65	8-10		Own.	4-7 x 8	22000	87 1/2 x 24	Leader.....B	12-18	2	375	Own.	4-5 x 6	5800	52x12	Twin City.....	20-35	5	2750	Own.	4-5 1/2 x 6 1/2	8400	60x20
Avery.....Tr. Runner		3		Own.	4-4 x 5 1/2	5000	x 8 1/2	Leader.....N	16-32	3-4	1275	Ch.	4-5 x 6	5800	52x12	Twin City.....	40-65	8	4750	Own.	4-7 1/2 x 9	23700	84x24
Avery.....RoadRazer				Own.	6-3 x 4	4600	42x6	Lincoln.....A	15-30	3	1600	Bud.	4-4 1/2 x 5	5000	40x14	Uncle Sam.....C-20	12-20	2-3		Her.	4-4 x 5	3000	46x12
Bates (St. Mule) H	15-25	3		Mid.	4-4 1/2 x 5 1/2	3600	48x10	Little Giant...B	16-22	4		Own.	4-4 1/2 x 5	5200	54x11	Uncle Sam.....B-19	20-30	3-4		Bea.	4-4 1/2 x 6	4650	50x12
Bates (St. Mule) F	18-25	3		Mid.	4-4 1/2 x 5 1/2	4850	56x10	Little Giant...A	26-35	6		Own.	4-5 1/2 x 6	8700	66x20	Uncle Sam.....D-21	20-30	3-4		Bea.	4-4 1/2 x 6	4600	50x12
Bates (St. Mule) G	25-35	4		Mid.	4-4 1/2 x 6	6500	56x10	Lombard.....100	12-16			Own.	6-5 1/2 x 7	19000	x 12	Wallis.....OK	15-27	3		Own.	4-4 1/2 x 5 1/2	3660	48x12
Bates (St. Mule) 40	30-40			Mid.	4-4 1/2 x 6	8500	84x12	London.....12-25	3			Mid.	4-4 1/2 x 5 1/2	48x12	Waterloo Boy...N	12-25	3		Own.	2-6 1/2 x 7	5869	52x12	
Bear.....B	25-35	4	4250	Ste.	4-4 1/2 x 6 1/2	6000	61x12	McCork-Deering...10-20	2	850	Own.	4-4 1/2 x 5	3700	42x12	Wisconsin.....16-30	3-4	1750	Ch.	4-5 x 6 1/2	5600	52x12		
Best.....30-40	4			Own.	4-4 1/2 x 6 1/2	8100	88x11 1/2	McCork-Deering...15-30	3	1250	Own.	4-4 1/2 x 6	5750	50x12	Wisconsin.....22-40	4-5	2550	Ch.	4-5 1/2 x 7	7500	52x12		
Best.....60-80	9			Own.	4-6 1/2 x 8 1/2	18580	89x20	Minneapolis...12-25	3			Own.	4-4 1/2 x 7	6600	56x12	Yuba (Ball Tread)	15-25	4	2750	Wis.	4-4 1/2 x 6	5750	53x12
Bryan.....Steam	15-30	3	2385	Own.	2-4 x 5	5500	x 12	Minneapolis...17-30	3-4			Own.	4-4 1/2 x 7	6100	54x12	Yuba (Ball Tread)	25-40	8	4500	Own.	4-5 1/2 x 7	10130	48x17 1/2
Case.....12-20	3		895	Own.	1-4 1/2 x 5	4230	42x12	Minneapolis...22-44	4-5			Own.	4-6 x 7	12410	62x20								
Case.....15-27	3-4		1350	Own.	1-4 1/2 x 6	6600	52x14	Minneapolis...35-70	8-10			Own.	4-7 1/2 x 9	22500	85x30								
Case.....22-40	4-5		2650	Own.	1-5 1/2 x 8 1/2	10700	56x16	Moline (Un.)...D	9-18	2-3	725	Own.	4-3 1/2 x 5	3380	52x8								
Case.....40-72	8-10		4900	Own.	1-7 x 8 1/2	21200	72x20	Moline (Orc.)...D	9-18	2-3	725	Own.	4-3 1/2 x 5	3340	44x8								
Caterpillar...2 Ton	15	3		Own.	1-4 x 5 1/2	4000	*	Monarch...C	20-30	4	3800	Bea.	4-4 1/2 x 6	8700	66x12								
Caterpillar...5 Ton	25	3		Own.	4-4 1/2 x 6	9400	*	Monarch...E	25-40	4	5000	Bea.	4-4 1/2 x 6	12000	67x12								
Caterpillar...10 Ton	60	6		Own.	4-6 1/2 x 7	20000	*	Monarch...D	35-60	8	6000	Bea.	4-4 1/2 x 6	15000	89x12								
Cletrac.....F	9-16	2	845	Own.	4-3 1/2 x 4 1/2	1930	*42x5 1/2	Nichols-Shepard...20-42	4-6	2600	Own.	2-8 x 10	13500	64x20									
Cletrac.....W	12-20	2	1345	Own.	4-4 x 5 1/2	3455	*48x8	Nichols-Shepard...25-50	6-8	3320	Own.	2-8 x 12	20500	69x28									
Eagle.....F	12-22	3		Own.	2-7 x 8	5850	48x12	Nichols-Shepard...35-70	8-12	4030	Own.	2-10 x 14	30000	73x32									
Eagle.....H	16-30	4		Own.	2-8 x 8	7100	48x12	Pioneer.....G	18-36	4	Own.	4-5 1/2 x 6	6500	60x18									
E-B.....AA	12-20	3		Own.	4-4 1/2 x 5	4550	54x12	Pioneer.....C	40-75	10	Own.	4-7 x 8	24000	96x24									
E-B.....Q	12-20	3		Own.	4-4 1/2 x 5	6500	60x12	Rumely OilPull..K	12-20	3	Own.	2-6 x 8	6638	51x12									
E-B.....16-32	4			Own.	4-4 1/2 x 5	9100	72x16	Rumely OilPull..H	16-30	4	Own.	2-7 x 8 1/2	9506	56x16									
Fagel.....19-12	2	1200	Lyc.	4-3 1/2 x 5	3600	48x8 1/2	Rumely OilPull..G	20-40	6	Own.	2-8 x 10	12968	64x20										
Fordson.....18	2	420	Own.	4-4 x 5	2562	42x12																	
Frick.....A	12-20	2	1000	Erd.	4-4 x 6	5800	60x10																
Frick.....C	15-28	3	1600	Bea.	4-4 1/2 x 6	6730	60x12																

GARDEN TRACTORS

Aro.....	F	3-6	1	\$385	Own.	1-4 1/2 x 5	1000	30x 4
Beeman.....	Jr.	1 1/2-1		195	B&S.	1-2 1/2 x 2 1/2	210	30x 3
Beeman.....	K	1 1/2-4		265	Own.	1-3 1/2 x 4 1/2	550	25x 3 1/2
Bolens.....				180	B&S.	1-2 1/2 x 2 1/2	200	16x 3
Centaur.....	1923	2 1/2-5	1	345	N-W.	1-4 1/2 x 4 1/2	800	28x 4
Do-It-All.....	(Jack)	2 1/2-6	1	395	Own.	1-3 1/2 x 3 1/2	750	
Do-It-All.....	(Baby)	2 1/2-6	1	495	Own.	1-4 1/2 x 5	1200	26 1/2 x 2 1/2
Do-It-All.....	(Twin 12)	4-15	1	495	Own.	2-3 1/2 x 3 1/2	800	32x 4
Kinkade.....		1 1/2-3	1	190	Own.	1-3 x 3	180	22x 5 1/2
M.B.M. Red.....	E	1-1 1/2		250	Own.	1-3 1/2 x 4	410	20 x 3
Motor Maculaturer.....				148	Own.	1-2 1/2 x 3 1/2	210	19 1/2 x 3
N.B.....	2	6	1	375	Own.	2-3 1/2 x 4	750	32x 4
Utilitor.....	501	2 1/2-4	1	295	Own.	1-3 1/2 x 4 1/2	750	24 1/2 x 3 1/2
Utilitor.....	501A	2 1/2-4	1	340	Own.	1-3 1/2 x 4 1/2	925	24 1/2 x 3 1/2

Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

PRICES							Wheel Base (Ins.)	Tire Size (Ins.)	NAME AND MODEL	ENGINE			ELECTRICAL SYSTEM		Clutch: Type and Make	Gearset Make	Universal: Type and Make	REAR AXLE		BRAKES: Service and Emergency	
OPEN MODELS			CLOSED MODELS			Make and Model				No. of Cyls. Bore and Stroke	Horse Power Rating (N.A.A.C.)	Carburetor Make	Generator and Starter Make	Ignition Make				Type and Make	Gear Ratio		
2-3 Pass.	4-5 Pass.	6-7 Pass.	2-3 Pass.	4-5 Pass.	6-7 Pass.																
\$1950c	\$1785	\$1850	\$1885c	\$2250	\$2485	127	33x4 1/2	American.....D-66	H-S. 11000	6-3 1/2x5	29.40	Strom.	G-D.	A-K.	s-p	B&B.	B & B.	m Hart.	F Salis	4.50	RL-R2
.....	1195	.....	1445c	1425	1495	115	32x4 1/2	*I Anderson.....41	Cont...7 U	6-3 1/2x4 1/2	23.44	Zenith	West.	West.	s-p	B&B.	Durston.	f Univ.	3 1/2 F Salis	4.75	RL-T1
.....	.....	1595	.....	.....	.....	122	32x4 1/2	*I Anderson.....50	Cont...8 R	6-3 3/4x4 1/2	27.31	Zenith	Remy.	Remy.	s-p	B&B.	Durston.	f Univ.	3 1/2 F Salis	1.50	RL-T1
.....	1535	.....	.....	2200	.....	120	32x4	Apperson.....6	Falls.....	6-3 1/2x4 1/2	23.44	Strom.	Remy.	Remy.	s-p	Rock.	Mech.	m Thie.	1 1/2 F Col.	5.10	RL-R2
.....	2800	2800	.....	3750	\$3750	130	33x5	Apperson.....8-23-S	Own.....	8-3 1/2x5	33.80	Johnson.	Remy.	Remy.	m-d	Own.	Own.	m Thie.	1 1/2 F Own	4.25	RL-R2
.....	1095	.....	1325d	1495d	1595	114	31x4	Auburn.....6-43	Cont...7 U	6-3 1/2x4 1/2	23.44	Strom.	Remy.	Remy.	s-p	B&B.	Warner.	m Univ.	1 1/2 F Col.	4.63	RL-T1
.....	1595	.....	1850d	2145	2345	124	32x4 1/2	Auburn.....6-63	Own.....	6-3 1/2x5	25.35	Strom.	Remy.	Remy.	s-p	B&B.	Warner.	m Thie.	1 1/2 F Col.	4.63	RL-T1
.....	1395	.....	1495d	1685d	1850	118	32x4	Barley.....6-50	Cont. 7 U	6-3 1/2x4 1/2	23.44	Strom.	Deleo.	Deleo.	s-p	B&B.	Fuller.	f M&E	3 1/2 F Col.	5.10	RL-R2
.....	935	965	.....	800g	1395c	109	31x4	Buick.....1924	Own.....	4-3 3/4x4 1/2	18.23	Marvel.	Deleo.	Deleo.	m-d	Own.	Own.	m Own.	3 1/2 F Own	4.66	FL-R2
.....	1275	1295	.....	1135g	1995c	120	32x4	Buick.....1924	Own.....	6-3 3/4x4 1/2	27.34	Marvel.	Deleo.	Deleo.	m-d	Own.	Own.	m Own.	F Own	1.10	FL-R2
1385g	.....	1565	1675a	2235	2285	128	32x4 1/2	Buick.....1924	Own.....	6-3 3/4x4 1/2	27.34	Marvel.	Deleo.	Deleo.	m-d	Own.	Own.	m Own.	F Own	4.70	FL-R2
.....	2085	2085	2085	3875	3950	132	33x5	Cadillac.....V 63	Own.....	8-3 1/2x5 1/2	31.25	Own.	Deleo.	Deleo.	m-d	Own.	Own.	m Spicer	F Tim	Opt. 1 1/2	FL-R2
.....	1750	1790	.....	2230d	2480c	122	32x4 1/2	Case.....X	Cont...8 R	6-3 3/4x4 1/2	27.34	Schebler.	Deleo.	Deleo.	m-d	Own.	Own.	f Snead.	1 1/2 F Col.	4.90	RL-R2
.....	.....	2475	.....	3325	3325	132	33x5	Case.....Y	Cont...9 T	6-3 3/4x5 1/2	31.54	Rayfield.	Deleo.	Deleo.	m-d	Own.	Own.	f Snead.	3 1/2 F Col.	4.70	RL-R2
.....	1185	.....	1335d	1535	117	32x4	*I Chalmers.....1923	*I Chalmers.....1923	Own.....	6-3 1/2x4 1/2	25.35	Strom.	A-L.	A-L.	m-d	Own.	Own.	m Mech.	3 1/2 F Tim	5.13	RL-R2
.....	1295	.....	.....	2095	122	32x1	*I Chalmers.....1923	*I Chalmers.....1923	Own.....	6-3 1/2x4 1/2	25.35	Strom.	A-L.	A-L.	m-d	Own.	Own.	m Mech.	3 1/2 F Tim	5.13	RL-R2
1595	1485	1635	1785c	1785	123	32x4	Chandler.....Six	Chandler.....Six	Own.....	6-3 1/2x5	29.40	Strom.	Bosch.	Bosch.	s-p	B&B.	Own.	Own.	F Own	4.45	RL-T1
.....	1085	.....	.....	12270	2095g	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
490	495	395g	.....	610	795	103	30x3 1/2	Chevrolet.....Superior	Own.....	4-3 1/2x4	21.76	Zenith.	Remy.	Remy.	c	Own.	Own.	m Own.	1 1/2 F Own	3.77	RL-R2
.....	1085	1045	.....	1145d	1245	112 1/2	29x4 1/2	Chrysler.....Six	Own.....	6-3 x4 3/4	21.60	Ball & B.	Remy.	Remy.	m-d	Own.	Own.	m Detr.	1 1/2 F Own	4.60	FL-T1
.....	2175	2175	2175	1245d	1345	112 1/2	31x4	Cleveland.....42	Own.....	6-3 1/2x4 1/2	22.50	Strom.	Bosch.	Bosch.	s-p	B&B.	Own.	m Mech.	3 1/2 F Own	4.90	RL-T1
.....	1475	.....	.....	1195d	1395	115	32x4	Cole.....Master	Nort.M311	8-3 1/2x4 1/2	39.20	Johnson.	Deleo.	Deleo.	m-d	Nort.	Nort.	m Spicer	F Col.	4.70	RL-R2
.....	995	995	.....	1195d	1395	115	31x4	Columbia.....Big Six	Cont...8 R	6-3 3/4x4 1/2	27.34	Strom.	A-L.	A-K.	s-p	B&B.	Durston.	m Spicer	1 1/2 F Tim	4.75	RL-R2
.....	1395p	1295	.....	1595c	1495	116	32x4	Columbia.....Light Six	Cont...6 Y	6-3 3/4x4 1/2	23.44	Strom.	A-L.	A-L.	s-p	B&B.	Durston.	m Spicer	1 1/2 F Tim	5.10	RL-T1
.....	3100	310	.....	3500c	4500	138	33x4 1/2	Courier.....	Falls. 8000	6-3 1/2x4 1/2	23.44	Strom.	West.	A-K.	s-p	B&B.	Muncie.	f Flex.	3 1/2 F Col.	5.10	RL-R2
.....	5800	6300	.....	7650	7650	142	33x5	Crawford.....23-6-70	Cont...6 T	6-3 3/4x5 1/2	31.51	Zenith.	West.	Bosch.	m-d	B-L.	B-L.	m Spicer	1 1/2 F Tim	.....	RL-R2
.....	5000	4650	4700	4650c	6350	132	33x5	Crawford-Dagmar.6-70	Cont...6 T	6-3 3/4x5 1/2	31.51	Zenith.	West.	Bosch.	m-d	B-L.	B-L.	m Spicer	1 1/2 F Tim	.....	RL-R2
.....	1295	1495	.....	1495c	6000c	138	33x5	Cunningham.....V4	Own.....	8-3 1/2x5	45.00	Strom.	Deleo.	Deleo.	m-d	Own.	Own.	f Snead.	F Tim	4.23	RL-R2
.....	850	880	.....	730g	1035	116	32x4	Daniels.....23-38	Own.....	8-3 1/2x5 1/2	39.20	Zenith.	Deleo.	Deleo.	m-d	Own.	Own.	m Spicer	F Tim	4.23	RL-R2
.....	3950	3950	4150c	4985c	5590	136	32x6	Daniels.....23-38	Own.....	8-3 1/2x5 1/2	39.20	Zenith.	Deleo.	Deleo.	m-d	Own.	Own.	m Spicer	F Tim	4.23	RL-R2
.....	1095	.....	1245c	1535d	1595	115	31x4	Davis.....71	Cont...7 U	6-3 1/2x4 1/2	23.44	Strom.	Deleo.	Deleo.	s-p	B&B.	Warner.	m Peters	3 1/2 F Tim	5.10	RL-R2
.....	6500	6250	6750	6500c	7800	134	33x5	Dodge Brothers.....	Own.....	4-3 3/4x4 1/2	24.03	Stewart.	N.E.	N.E.	m-d	Own.	Own.	m Own.	1 1/2 F Own	4.54	RL-R2
.....	890	890	.....	1065d	1365	109	31x4	Dorris.....6-80	Own.....	6-4 x5	38.40	Strom.	West.	Bosch.	m-d	Own.	B-L.	m Spicer	1 1/2 F Tim	3.77	RL-R2
.....	1485	1095	1275d	1395c	1595	112	32x4	Dort.....27	Falls.T8000	6-3 1/2x4 1/2	23.44	Carter.	Bosch.	Bosch.	m-d	Own.	B-L.	m Spicer	1 1/2 F Fl.	4.66	RL-R2
.....	995	.....	1195d	1395	1495	115	32x4	Duesenberg Straight 8	Own.....	8-2 1/2x5	26.45	Strom.	Deleo.	Deleo.	s-p	Own.	Own.	f Ch.	1 1/2 F Own	4.45	FL-T1
.....	1395	1595	1595d	1995	2195	118	32x4	Durant.....A-22	Cont.Spec	4-3 3/4x4 1/2	24.03	Tillotson	A-L.	A-L.	s-p	Own.	Warner.	m Spicer	1 1/2 F Ad.	4.33	RL-R2
.....	1895	.....	2145	2345	118	32x4 1/2	Earl.....40	Own.....	4-3 1/2x5 1/2	18.01	Scow.	A-L.	Comm.	s-p	B&B.	Own.	f Own.	1 1/2 F Own	4.87	RL-T1	
.....	850	.....	975	.....	110 1/2	31x3 3/4	Ecar.....4-40	Lye.....K	Own.....	4-3 3/4x5	21.03	Strom.	Deleo.	Deleo.	s-p	B&B.	Warner.	m Peters	3 1/2 F Salis	4.50	RL-R2
.....	1295	1295	1295	1895c	2085	120	32x4 1/2	Ecar.....6-60	Cont...8 R	6-3 3/4x4 1/2	27.31	Strom.	Deleo.	Deleo.	s-p	B&B.	Warner.	m Spicer	3 1/2 F Salis	4.50	RL-R2
.....	265r	295s	230g	525	685	110 1/2	31x3 3/4	Elgin.....	Falls-Spec.	6-3 1/2x4 1/2	23.44	Strom.	Deleo.	Deleo.	s-p	B&B.	Warner.	f-	1 1/2 F Col.	4.33	FL-T1
.....	2975	2975	.....	3975	3975	132	32x4 1/2	Essex.....	Own.....	6-2 3/4x4	16.54	Own.	Bosch.	Bosch.	m-d	Own.	Own.	m Spicer	1 1/2 F Own	5.40	RL-R2
.....	1950	.....	2250c	2250	\$2950d	115	32x4 1/2	Flint.....	Cont.Spec	4-3 3/4x4	27.31	Strom.	Deleo.	Deleo.	s-p	Own.	Warner.	m Spicer	1 1/2 F Ad.	.....	RL-R2
.....	895	895	995d	1095	1145	112	32x4	Ford.....T	Own.....	4-3 3/4x4	22.50	Own.	Own.	Own.	m-d	Own.	Own.	m Own.	1 1/2 F Own	3.63	TL-R2
.....	510	520	.....	625d	835	100	30x3 1/2	Fox.....Air-Cooled	Own.....	6-3 3/4x5	27.34	Zenith.	West.	Scintilla	m-d	B-L.	B-L.	m Spicer	1 1/2 F Tim	4.90	RL-R2
.....	2250	2250	.....	3350	3350	120	32x4 1/2	Franklin.....10-B	Own.....	6-3 1/2x4	25.35	Own.	A-K.	A-K.	s-p	M&E.	Own.	m Spicer	1 1/2 F Own	4.73	TL-R2
.....	1395	1395	1495c	1950	1950	115	32x4	Gardner.....Series 5	Lye.....Spec	4-3 1/2x5	21.76	Zenith.	West.	West.	s-p	B&B.	Mech.	m Peters	3 1/2 F Fl.	4.80	RL-T1
.....	1775	.....	2175c	2350	2350	121	32x4	Gray.....	Own.....	4-3 3/4x4	21.03	Scow.	West.	West.	s-p	Own.	Own.	m Mech.	3 1/2 F Tim	3.90	RL-T1
.....	1995	.....	2695d	2850	2850	132	33x5	H.C.S.....Series 4	Weid.....	4-3 3/4x5 1/2	22.50	Strom.	Deleo.	Deleo.	m-d	B-L.	B-L.	m Spicer	3 1/2 F Own	4.63	RL-R2
.....	1295	1395	1695b	2195	1845	121	32x4 1/2	H.C.S.....Series 6	Own.....	6-3 1/2x5	29.40	Strom.	Deleo.	Deleo.	m-d	B-L.	B-L.	m Spicer	3 1/2 F Own	4.36	RL-R2
.....	1345	1425	1750d	1475d	1895	126	34x4 1/2	Hanson.....66	Cont...8 R	6-3 3/4x4 1/2	27.31	Marvel.	Deleo.	Deleo.	s-p	B&B.	G-L.	m Univ.	1 1/2 F Tim	4.66	RL-R2
.....	1175	1175	1195a	1445	1750	115	32x4	Hatfield.....A-42	H-S. 7000	6-3 1/2x5	19.60	Zenith.	Dyneto	Comm.	s-p	B&B.	G-L.	m Spicer	3 1/2 F Col.	4.63	RL-R2
.....	1195	1085	960g	1220d	1325d	112	31x4	Hatfield.....6-55	H-S. 40	6-3 1/2x5	25.35	Strom.	Bosch.	Bosch.	s-p	B&B.	Durston.	m Spicer	1 1/2 F Col.	4.63	RL-R2
.....	1750	1675	.....	2285c	2285	120	32x4	Haynes.....77	Own.....	6-3 3/4x5 1/2	31.54	Strom.	L-N.	Kingst.	m-d	War.	Own.	m Univ.	3 1/2 F Own	4.60	RL-R2
.....	1995	.....	2585c	2585	2785	124 1/2	32x4 1/2	Haynes.....60	Own.....	6-3 1/2x4 1/2	29.40	Rayfield.	L-N.	Kingst.	m-d	War.					

Balloon Tires

now optional on

The Coachbilt

ANDERSON

ALUMINUM SIX



THE whole automobile world is talking about balloon tires—which are revolutionizing all motoring.

Equipped with 32 x 6 inch balloon tires inflated to only 20 pounds, the Anderson Aluminum Six rides over holes and obstructions as though these simply did not exist. You have never experienced comfort or luxury like this.

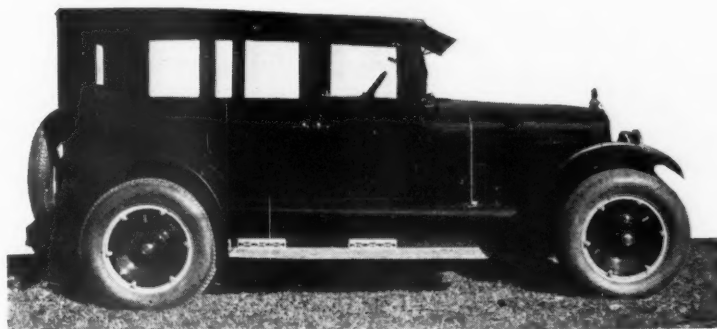
Just as important is the saving on the car itself. Most of the jars and shocks are eliminated. Tests indicate that the life of the car is thus increased as much as 50% over the best previous performances in the moderate-priced field.

If you want to sell a moderate priced, light car that surpasses the heaviest cars in luxury and establishes a new standard of economy, the car for you is the balloon-equipped Anderson.

Deliveries are now being made. Write us for particulars.

*4-wheel brakes also
optional at only
\$75 extra list.*

ANDERSON MOTOR CO., ROCK HILL, S. C.



Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

PRICES										NAME AND MODEL	ENGINE				ELECTRICAL SYSTEM		Clutch, Type and Make	Gearset Make	Universal: Type and Make	REAR AXLE		BRAKES, Service and Emergency
OPEN MODELS			CLOSED MODELS			Wheel Base (Ins.)	Tire Size (Ins.)	Make and Model	No. of Cyls. Bore and Stroke		Horse Power Rating (N.A.A.C.)	Carburetor Make	Generator and Starter Make	Ignition Make	Type and Make	Gear Ratio						
2-3 Pass.	4-5 Pass.	6-7 Pass.	2-3 Pass.	4-5 Pass.	6-7 Pass.																	
5000	5000	5000	4200c	6300	6500	132	33x5	LaFayette.....	Own.....	8-3 1/4x5 1/2	33.80	Johnson.	Delco.	Delco.	m-d Own.	Own.....	m Own.	F Own	4.58	R-L-R		
1795	1795	1795	2145d	2345	2345	123	32x4 1/2	Lexington.....23	Aust.....M	6-3 1/4x4 1/2	26.30	Rayfield.	G-D.	Conn.	s-p Long.	Warner.	f Sneed.	1/2 F Sals	5.10	R-L-T		
3800	3800c	3800	4600c	4400	4900	136	33x5	Lincoln.....	Own.....	8-3 3/8x5	30.45	Strom...	Delco.	Delco.	m-d Own.	Own.....	m Spicer	F Tim	4.58	R-L-R		
8070	7900	7900		11750	11600	142	35x5	*2Locomobile Series 8	Own.....	6-4 1/2x5 1/2	48.60	Ball&B.	West..	Delco.	m-d Own.	Own.....	m Own.	F Own	3.85	R-L-R		
2300g	2785	2785	2985a	3585	4285s	136	32x4 1/2	*3Marmon.....34	Own.....	6-3 3/4x5 1/2	33.75	Strom...	Delco.	Delco.	m-d Own.	Own.....	m Spicer	1/2 F Own	4.10	R-L-R		
795	795		895b	1195	1585d	109	31x4	Maxwell.....	Own.....	4-3 3/4x4 1/2	21.03	Stewart.	Remy..	Remy..	s-p Mech.	Own.....	f Own.	1/2 F Own	4.60	R-L-T		
2500	2500		3000	3000	3000	127	32x4 1/2	McFarlan.....	Own.....	6-3 3/8x5	27.34	Rayfield.	Delco.	Delco.	m-d			1/2 F		R-L-T		
5400	5000	5700	6720	6600b	6810	140	33x5	*4McFarlan.....1923	Own.....	6-4 1/2x6	48.60	Rayfield.	West..	West..	m-d M&E.	B-L....	m Peters	F Tim	3.75	R-L-R		
3950b	3950c	3950c	4700	4850	5250	132	32x4 1/2	Mercer.....Series 5	Own.....	4-3 3/4x6 1/2	22.50	Ball&B.	West..	Eisem.	m-d Own.	Own.....	m Spicer	F Own	3.87	T-L-R		
	3750c	3750c	4700	4850	5250	132	32x4 1/2	Mercer.....6	Own.....	6-3 3/8x5	33.75	Strom...	West..	Eisem.	m-d Own.	Own.....	m Spicer	1/2 F Own	3.77	T-L-R		
1295	1295		1495d	1695	1895	115	31x4	Moon.....U6-40	Cont...7 U	6-3 3/4x4 1/2	23.41	Strom...	Delco.	Delco.	s-p B&B.	Warner.	m Spicer	1/2 F Tim	5.10	R-L-T		
			1895	2585	2485	123	32x4 1/2	Moon.....6-58	Cont...8 R	6-3 3/8x4 1/2	27.31	Strom...	Delco.	Delco.	s-p B&B.	B-L....	m Spicer	1/2 F Tim	5.09	R-L-R		
1240	1240	1050g	1645c	2090c	2090	121	33x4	Nash.....691-3-6-7	Own.....	6-3 1/4x5	25.35	Marvel.	Delco.	Delco.	s-p B&B.	Own.....	m Own.	1/2 F Own	4.50	R-L-T		
915	935		1195d	1890	2190	127	34x4 1/2	Nash.....692-4-5-8	Own.....	6-3 1/4x5	25.35	Marvel.	Delco.	Delco.	s-p B&B.	Own.....	m Own.	1/2 F Own	4.90	R-L-T		
			1445	1890	2190	127	34x4 1/2	Nash.....41-8	Own.....	4-3 3/4x5	18.23	Marvel.	Delco.	Delco.	s-p B&B.	Own.....	m Own.	1/2 F Own	4.88	R-L-T		
2175	2475c	2375	2485d	3250	3285	130	32x4 1/2	National.....BB	Own.....	6-3 1/2x5 1/2	29.40	Rayfield.	West..	Delco.	s-p B&B.	B-L....	m Univ.	F Col.	4.08	R-L-R		
2500	2500c	2600c		3725	3500	128	33x5	Noma.....4C	Cont...8 R	6-3 3/8x5 1/2	27.34	Zenith..	Delco.	Delco.	s-p B&B.	Detroit.	m Spicer	1/2 F Tim	4.45	R-L-R		
945	945		1095a	1345		113	31x4	Oakland.....6-54	Own.....	6-2 1/2x4 1/2	18.90	Strom...	Remy..	Remy..	s-p Hoos.	Muncie.	m Mech.	1/2 F Own	4.70	F-L-T		
750	750		885d	955	1035	110	31x4	Oldsmobile.....30	Own.....	6-2 3/4x4 1/2	18.15	Zenith..	Delco.	Delco.	s-p B&B.	Muncie.	f Own.	1/2 F Own	5.10	R-L-T		
495	495		395g	750	795	106	30x3 1/2	Overland.....91	Own.....	4-3 1/2x4	19.60	Tillotson	A-L....	A-L....	s-p B&B.	Own.....	m Own.	1/2 F Own	4.50	R-L-R		
695						106	30x3 1/2	Overland.....92	Own.....	4-3 1/2x4	19.60	Tillotson	A-L....	A-L....	s-p B&B.	Own.....	m Own.	1/2 F Own	4.50	R-L-R		
2585	2585	2350g	2750c	3275c	3375	126	33x4 1/2	Packard.....126	Own.....	6-3 3/8x5	27.34	Own.....	A-K....	Delco.	m-d Own.	Own.....	m Spicer	1/2 F Own	4.66	F-L-R		
3850c	3650		2785	2450g	3625f	133	33x4 1/2	Packard.....133	Own.....	6-3 3/8x5	27.34	Own.....	A-K....	Delco.	m-d Own.	Own.....	m Spicer	1/2 F Own	4.66	F-L-R		
			4550c	4725	4700g	136	33x5	Packard "Eight"....136	Own.....	8-3 3/8x5	36.45	Own.....	Dyneto.	Delco.	m-d Own.	Own.....	m Spicer	1/2 F Own	4.70	F-L-R		
			3850	4900f	4950f	143	33x5	Packard "Eight"....143	Own.....	8-3 3/8x5	36.45	Own.....	Dyneto.	Delco.	m-d Own.	Own.....	m Spicer	1/2 F Own	4.70	F-L-R		
			2450	3235	3235	131	33x4 1/2	Paige.....6-70	Cont...9 A	6-3 3/8x5	33.75	Rayfield.	Remy..	A-K....	m-d Long.	Warner.	m Mech.	1/2 F Tim	4.90	R-L-R		
				2850f	3435g			Paterson.....23-6-52	Cont...8 R	6-3 3/8x4 1/2	27.34	Strom...	Delco.	Delco.	s-p B&B.	Durston.	m Hart.	1/2 F Sals	4.50	R-L-R		
1550	1390	1425	2395d	2395	3840	128	32x4 1/2	Peerless.....66	Own.....	8-3 1/2x5	33.80	Ball&B.	Delco.	Delco.	m-d Own.	Own.....	m Spicer	1/2 F Tim	4.90	R-L-R		
	2090	2750	2260g	3300	3690	138	33x5	Pierce-Arrow.....	Own.....	6-4 x5 1/2	38.40	Own.....	Delco.	Delco.	m-d Own.	Own.....	m Spicer	1/2 F Own	4.29	R-L-R		
5250	5250	5250	6800	7000f	7000	120	32x4 1/2	Pilot.....6-56	H-S...90	6-3 1/2x5	25.35	Tillotson	Wagner	Wagner	s-p Hoos.	Muncie.	m Blood.	1/2 F Col.	4.67	R-L-R		
	1605	1745	1745	2445	2495f	126	32x4 1/2	Premier.....6-D	Own.....	6-3 3/8x5 1/2	27.34	Strom...	Delco.	Delco.	s-p B&B.	Own.....	m Spicer	1/2 F Tim	4.58	R-L-R		
2535	2535	2585d	2635d	3385	3585	126 1/2	32x4 1/2	R & V Knight.....H	Own.Kn't	6-3 1/2x4 1/2	29.40	Strom...	A-L....	A-L....	s-p B-L.	B-L....	m Spicer	1/2 F Tim	5.40	R-L-R		
	1335		1545d	1875	2235f	120	32x4 1/2	Reo.....T6	Own.....	6-3 1/2x4 1/2	24.34	Rayfield.	N.E....	N.E....	s-p B-L.	B-L....	m Univ.	1/2 F Tim	4.70	R-L-R		
				1985	3260f	120	32x4 1/2	Revere.....M	Dues...4	4-4 1/2x6	28.90	Strom...	West..	Bosch.	m-d B-L.	B-L....	m Spicer	1/2 F Std	3.44	R-L-R		
3200c	3200		3200c	4000		131	32x4 1/2	Rickenbacker.....B	(Monsen.4	4-4 1/2x6	30.63	Strom...	Bosch.	Bosch.	s-p Own.	Warner.	m Mech.	1/2 F Col.	5.10	F-L-T		
1645	1595		2035	2135		117	32x4	Roamer.....6-54-E	Cont.12XD	6-3 1/2x5 1/2	29.40	Strom...	Bosch.	Split.	s-p B&B.	G-L....	f Sneed.	1/2 F Tim	4.60	R-L-R		
2685	2485	2685	2750c	3285	3585d	128	32x4 1/2	Roamer.....6-54-E	Cont.12XD	6-3 1/2x5 1/2	29.40	Strom...	West..	Split.	s-p B&B.	G-L....	f Sneed.	1/2 F Tim	4.60	R-L-R		
				4250p	3950	138	32x4 1/2	Rollin.....4-75-E	Own.....	4-4 1/2x6	28.90	Strom...	West..	Split.	s-p B&B.	G-L....	f Sneed.	1/2 F Tim	4.60	R-L-R		
3385	3485	3800	3650c	4050p		128	32x4 1/2	Rolls-Royce.....40-50	Own.....	4-4 1/2x6 1/2	28.90	Tillotson	Dyneto.	Conn.	s-p B&B.	Muncie.	f Sneed.	1/2 F Sals	5.10	F-L-R		
3785						112	31x5 1/2	Rubay.....	Own.....	4-4 1/2x6 1/2	28.90	Strom...	Bijur..	Bijur..	c Own.	Own.....	m Own.	F Own	3.72	R-L-R		
11400	10900	11450		12800	12850	143 1/2	33x5	Sayers Six.....DP	Cont...8 R	6-3 3/8x5 1/2	27.34	Strom...	Delco.	Delco.	s-p B&B.	G-L....	m Arvac.	1/2 F Std	4.75	R-L-R		
				13500	12900	108	30x3 1/2	Seneca.....L-2 & O-2	Lye...KB	4-3 1/2x5	19.60	Zenith..	A-L....	A-L....	s-p B&B.	G-L....	m Univ.	1/2 F Peru	4.75	R-L-R		
1615	1645		2645d	2645		118	33x4	Seneca.....50c & 51c	Lye...KB	4-3 3/8x5	21.03	Zenith..	A-L....	A-L....	s-p B&B.	G-L....	m Univ.	1/2 F Peru	4.50	R-L-R		
875	875			3585	3985	130	32x4 1/2	Stanley.....740	Own.....	2-4 x5	13.00	None...	Bijur..	None...	None...	None...	None...	None...	None...	None...	R-L-R	
985	985			785	p935d	102	30x3 1/2	Star.....	Cont.Spec	4-3 1/2x4 1/2	15.63	Tillotson	A-L....	A-L....	s-p Own.	Warner.	m Spicer	1/2 F Tim	4.87	R-L-R		
2750	2750	2750	2425c	3585	3985	130	32x4 1/2	Stearns-Knight.....SK14	Own.Kn't	4-3 1/2x5 1/2	22.50	Schebler.	West..	A-K....	m-d Own.	Own.....	f Cli.	1/2 F Own	1.50	R-L-R		
490	490		640d	785	p935d	102	30x3 1/2	Stearns-Knight.....6	Own.Kn't	6-3 3/8x5	27.34	Schebler.	West..	A-K....	m-d Own.	Own.....	f Cli.	1/2 F Own	4.70	R-L-R		
1750c	1750	1445g	2195g	3395	3395	130	34x4 1/2	Stephens.....10	Own.....	6-3 1/2x4 1/2	25.35	Strom...	Delco.	Delco.	s-p B&B.	Mech.	m Mech.	1/2 F Tim	5.10	R-L-T		
2395	2395	2495	2195g	3395	3395	130	34x4 1/2	Stephens.....20	Own.....	6-3 1/2x4 1/2	25.35	Strom...	Delco.	Delco.	s-p B&B.	Mech.	m Mech.	1/2 F Tim	5.30	R-L-T		
			1595d	1995		117	32x4	Sterling-Knight.....	Own.Kn't	6-3 1/2x4 1/2	25.35	Strom...	West..	West..	m-d Fuller.	Fuller.	f Clim.	1/2 F Tim	4.66	R-L-R		
1295	1295		1595d	1995		117	32x4	Studebaker.....Light Six	Own.....	6-3 1/2x4 1/2	23.44	Strom...	Wag-R.	Wag-R.	s-p Own.	Own.....	f Ther.	1/2 F Own	4.55	R-L-R		
1750	1750		1895d	1985		119	32x4	Studebaker.....Spec'l Six	Own.....	6-3 1/2x5	29.40	Strom...	Wag-R.	Wag-R.	s-p Own.	Own.....	m Spicer	1/2 F Tim	4.33	R-L-R		
1450g			1835d	2495	2685	126	33x4 1/2	Studebaker.....Big Six	Own.....	6-3 3/8x5	30.04	Ball&B.	Wag-R.	Wag-R.	s-p Own.	Own.....	m Spicer	1/2 F Own	3.70	R-L-R		
						120	32x4	Stutz.....690	Weid...600	6-3 3/8x5	27.34	Strom...	Remy..	Remy..	s-p B&B.	Warner.	m Mech.	1/2 F Tim	4.66	R-L-R		
1995																						

Make January a Round-Up Month of your connecting rods needing Rebabbitting



One of the best ways to make your garage or repair shop pay more profits in 1924 is to send your old connecting rods to a Watkins Service Plant for rebuilding—and to keep it up throughout the year.

Send Parts to Factory Nearest You for
Quickest Service

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KINGSTON, Ont.....Watkins Mfg. Co. of Canada, Ltd.
LOS ANGELES, Calif.....Miller & McIntyre
MEMPHIS, Tenn.....J. B. Cook Auto. Machine Co.
NEW YORK, N. Y.....Lake Sales Company
OMAHA, Nebr.....Interstate Machinery & Supply Co.
ST. LOUIS, Mo.....H. & H. Machine Co.
SYRACUSE, N. Y.....Watkins Mfg. Co. of New York
TOLEDO, Ohio.....Stewart-Burgan Co.
WASHINGTON, D. C.....R-L Motive Parts, Inc.
WATERLOO, Ia.....All States Rebabbitting Service
WICHITA, Kans., Home Office.....The Watkins Mfg. Co.



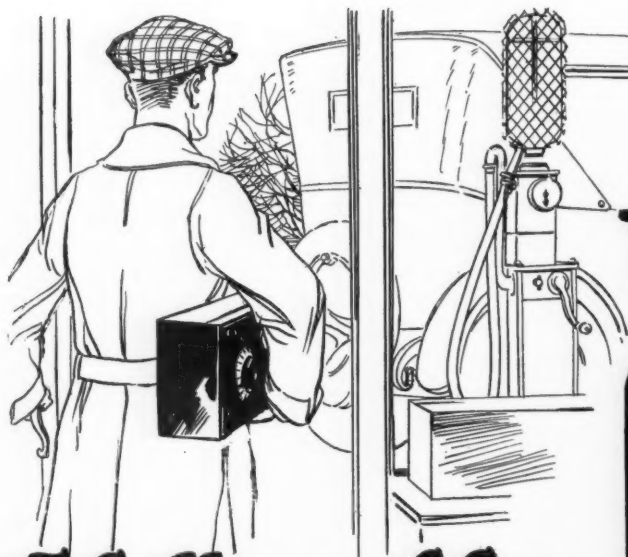
Round 'em up———Box 'em up
Ship them to the Nearest Watkins Factory

A verbal search warrant to your service man may bring into custody connecting rods which, after being rebuilt by Watkins with new broached bearing, laminated shims, new piston pin bushing, new bolts and nuts, will be worth double or triple the rebuilding cost—but, worth nothing if allowed to lay burned out.

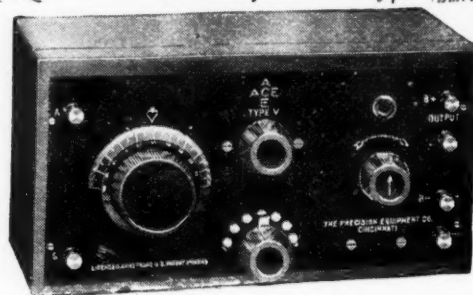
Those who have tried Watkins Service know there is profit in rebuilt connecting rods—that Watkins bearings fit quickly to the crankshaft, holding down labor costs on flat-rate repair jobs. They are certain of the quality of work, materials used, prompt Watkins Service, and a satisfied customer.

WATKINS
Complete **REBABBITTING**
SERVICE

Once you've tried Watkins Service you'll have no imitation. Write any factory today for catalog price list. It explains several specialized rebabbitting services not obtainable elsewhere.



5 Gallons of Gas and an **ACE RADIO SET**



You fellows who sell auto supplies are passing up one of the biggest opportunities of your business career every day you neglect putting in a good radio line—and the Ace Family of Radio Sets is sure the one "to tune in on." You can "pick up" sales all over your territory with them.

The Ace Type V which is shown at the right sells for \$20.00 on which you as a dealer make a big profit. The Ace Type V is an Armstrong Regenerative receiver, licensed under the Armstrong U. S. Patent No. 1,113,149. Stations are heard distinctly on it from coast to coast. Fill in the coupon now—get full information—let us explain in detail how you can increase sales with the same overhead you now have—do it now.

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Ace Type 3C Consolelette

This is a new addition to the Ace Family. Has beautiful solid mahogany, wax finished cabinet. Set consists of a regenerative tuner, detector and two stages of amplification, with built in loud speaker. The tuning circuit is licensed under the Armstrong U. S. Patent No. 1,113,149 and due to the particular method of winding Croslley coils it is exceptionally selective. Has sufficient room inside Cabinet for dry batteries making a complete self contained long range receiving outfit. Phone jack for tuning with head phones; Croslley multistat; filament switch; Croslley moulded condenser; beautifully engraved formica panel. Uses all kinds of tubes. A wonderful set that sells for \$125.00—without tubes or batteries.

The New Ace Type 3B

This set is equal to a combination of the Ace Type V and the Ace two-stage amplifier. Manufactured under Armstrong U. S. Patent No. 1,113,149. A filament switch eliminates necessity of turning out rheostats when set is not in use. You may turn off the set by throwing switch and come back later without retuning. Has telephone jack. Croslley multistat. Universal filament control rheostat for all makes of tubes. Sells for \$50.00.

GOODRICH Balloon Cord

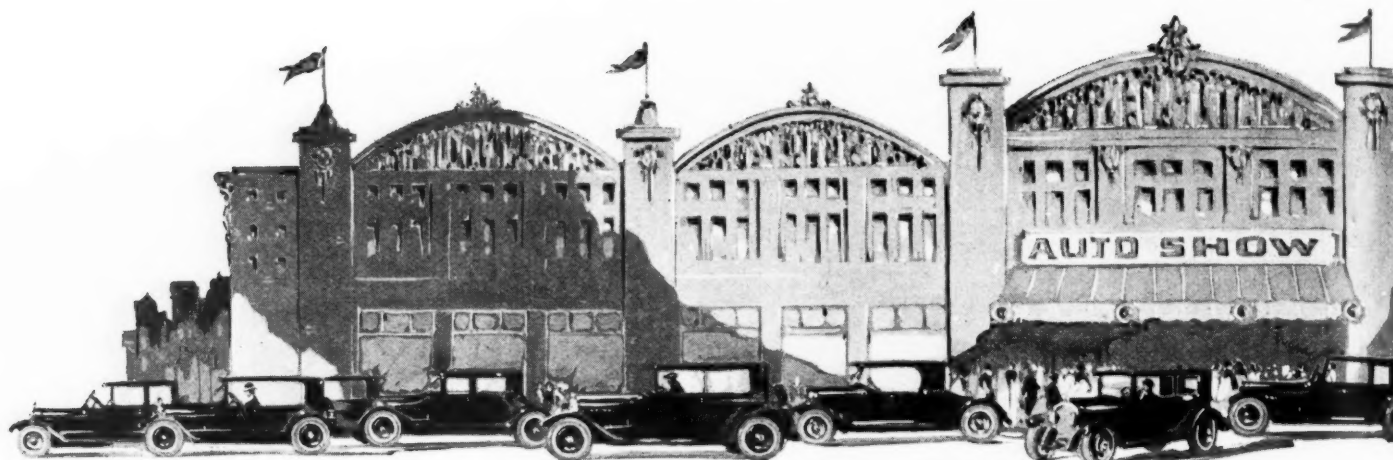


The Balloon Cord has arrived; here it is in America's first and original cord tire—Goodrich. A giant, low-air-pressure, superflexible cord which reduces bumps, car tracks, and holes in the road to the easy-riding smoothness of a city boulevard. To get the de luxe service of the balloon cord tire at its best, specify Goodrich.

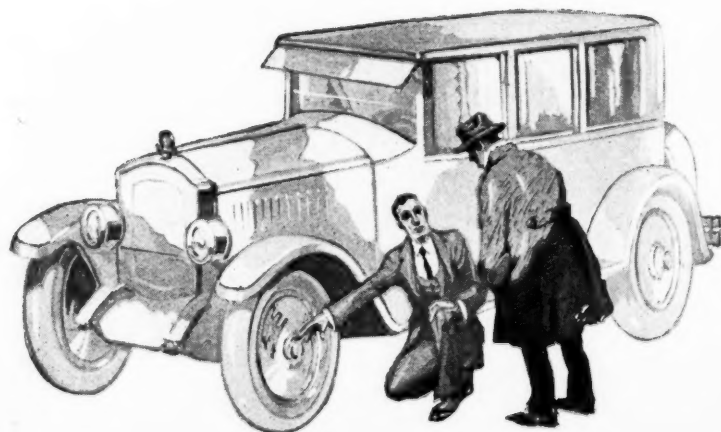
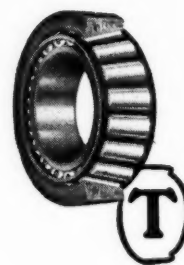
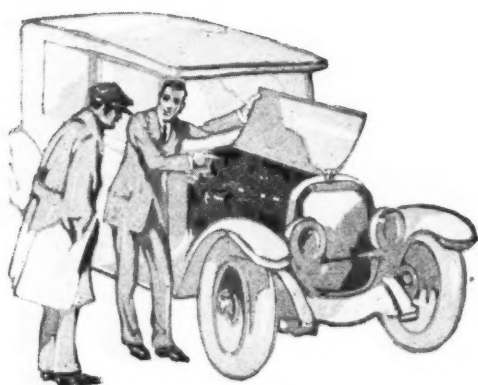
A wonderful tire to ride; a wonderful tire to drive. Its comfort is a luxury. Greater air space—with the air under lower pressure—smooths out all types of roads. The life of a car is greatly prolonged because of the reduced shocks and jars to the chassis. Safety is multiplied and skidding is practically eliminated.

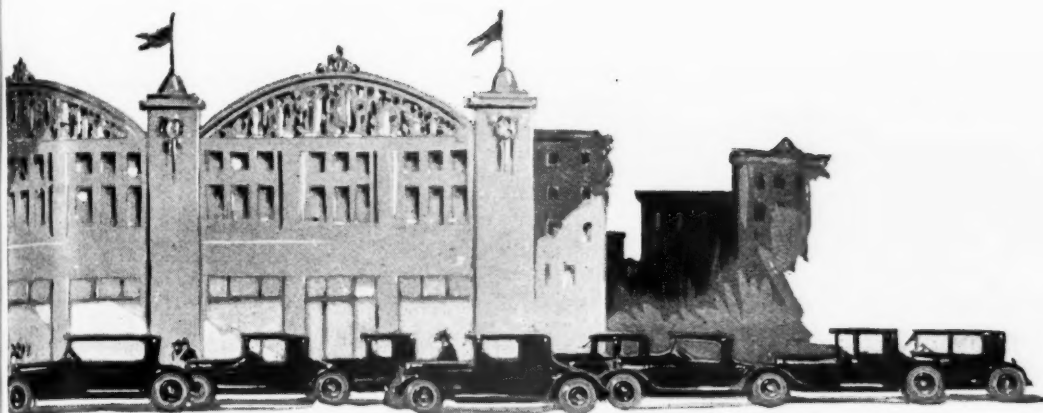
THE B. F. GOODRICH RUBBER CO.
ESTABLISHED 1870

Our Research Department invites suggestions for new uses of rubber



Year after Year, At the Shows, This Question—





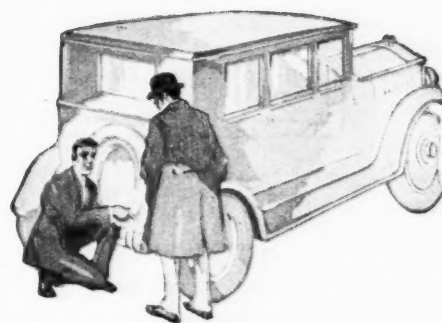
Universal use of Timken Bearings; powerful, constant Timken advertising; and above all, Timken performance, have brought into being this question—

“Has it Timken Bearings and where?”

The weight of Timken prestige works for the salesman who tells of the Timken Bearings in the car he sells.

Confidence in his whole selling story is increased for the salesman who can reply affirmatively and specifically to the inquiry, “Has it Timken Bearings and where?”

There are *accepted* selling points for any car in Timken Dual Duty (the ability to carry *all* loads at *all* speeds) and in Timken adjustability for the wear that *must* follow motion.



The Timken Roller Bearing Co
CANTON, OHIO

TIMKEN
Tapered
ROLLER BEARINGS



A Gauge of Value by Which Case Asks to Be Judged

THE resale index printed below is taken from the National used car market report. It shows the average resale valuation—in 48 states—of seven of the most widely sold motor cars in the Case price class. The standard five passenger, open touring car is used as the basis of comparison:

CASE.....SECOND		
Car A.....	First	Car D.....Fifth
Car B.....	Third	Car E.....Sixth
Car C.....	Fourth	Car F.....Seventh

(Names and actual valuation of these seven cars will be given on request.)

Above classification shows that Case is surpassed in national resale valuation by only *one* other car in its class. Yet, in Chicago, one of America's most competitive markets, Case exceeds this car's resale value by a margin of fifty dollars.

This eloquent testimonial of the basic worth of Case motor cars, shows conclusively that when old, as when new, Case cars give owners the greatest possible return on their investment.

Wouldn't you like to handle such a car as this? Aside from the profit end of it, there's genuine satisfaction in selling a product that gives a man the most for his money. This is one sure way of making a booster of every customer.

J. I. CASE T. M. COMPANY, RACINE, WISCONSIN



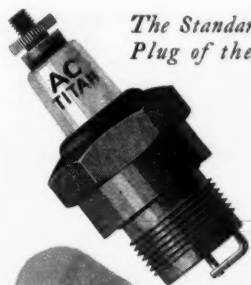
CASE
MOTOR CARS



THE SIGN OF MECHANICAL EXCELLENCE



FOR MORE THAN EIGHTY YEARS



*The Standard Spark
Plug of the World*

More than 85 per cent of all cars and trucks produced in this country, Fords excluded, are factory equipped with AC Spark Plugs. Among these cars are:

Buick	Jewett
Cadillac	Jordan
Chalmers	LaFayette
Chandler	Marmon
Chevrolet	Maxwell
Cleveland	Nash
Dodge Brothers	Oakland
Dort	Oldsmobile
Durant	Paige
Essex	Star
Hudson	Yellow Cab
Hupmobile	

This tremendous, ready-made market for AC's is right at your door and will always be there in ever increasing size.

The dealer who sells AC Spark Plugs is putting his effort behind an article of demonstrated quality and popularity.

The AC line is a safe investment because the market for it is assured by its factory equipment business.

The carbon-proof feature of the AC 1075 makes it a better plug for Ford engines.

AC Spark Plug Company, FLINT, Michigan

Makers of AC Spark Plugs—AC Speedometers

U. S. Pat. No. 1,135,727, April 13, 1915. U. S. Pat. No. 1,216,139, Feb. 13, 1917
Other Patents Pending



SPARK PLUGS SPEEDOMETERS

The accurate, easily installed Ford Speedometer can be sold to every Ford owner

MORE VALUE

5 Passenger Sedan
1924 Model

\$**1295**

F. O. B. CLEVELAND



New 4 Door Sedan

\$**1395**

F. O. B. CLEVELAND

—This Cleveland type was
great value at \$1545.
More impressive than
ever is the new 1924
model at \$1395



CLEVELAND

Than in Any Car!

An Announcement that Every Live Dealer Should Read

FOR 1924, Cleveland announces two new sedans at prices never before achieved by any builder of quality sixes: \$1295 for a new five passenger sedan; and \$1395 for a luxurious new four door sedan.

Every dealer who wants to

increase his profits should closely examine these dominant new models—for on the basis of beauty, power, size, and durable construction, they are the biggest closed car values ever offered to the public.

Bodies by Fisher

The Fisher bodies represent a welcome departure from the make-shift construction resorted to by so many manufacturers in their endeavors to produce low cost closed

cars. Neither sound construction nor beauty of proportion has been sacrificed. Every detail is perfect—color finish, upholstery, seating arrangement and appointments.

New Motor

The new Cleveland motor with its extra power in the driving range, enables the Cleveland to out-

perform all other sixes of its class. For speed on hills and smooth, silent acceleration it has no equal.

Bigger Dealer Profits

The dealer who acquires the Cleveland line for 1924 has a double assurance of increasing his profits: He can offer the biggest closed car values of the year. And he operates under the fairest dealer

contract ever devised—one which pays the maximum discount on every car instead of using the unfair sliding scale.

We have a real proposition for dealers of the right sort. Get it today.

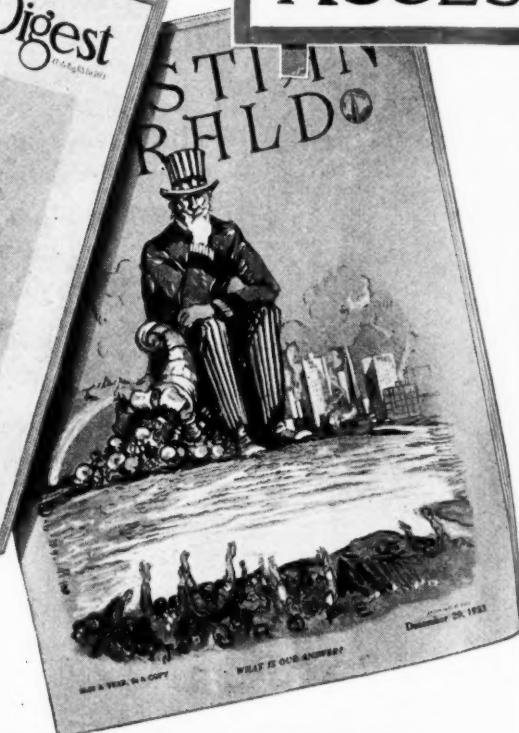
CLEVELAND AUTOMOBILE COMPANY
Export Department, 1819 Broadway, New York City

CLEVELAND
Cable Address, "CLEVEAUTO"

AND SIX

Stewart Advertising

will bring buyers



Buy *Stewart*
ACCESSORIES

Think! **23** big full page selling smashes in the Saturday Evening Post. That means two and a half million messages multiplied by twenty-three.

60 big town newspapers will carry Stewart advertising to other millions of readers.

6 months of outdoor poster advertising from coast to coast.

Then add to that—the Christian Herald, Literary Digest and the Country Gentleman.

These magazine and newspaper readers are *your customers*. We'll tell 'em—you sell 'em.

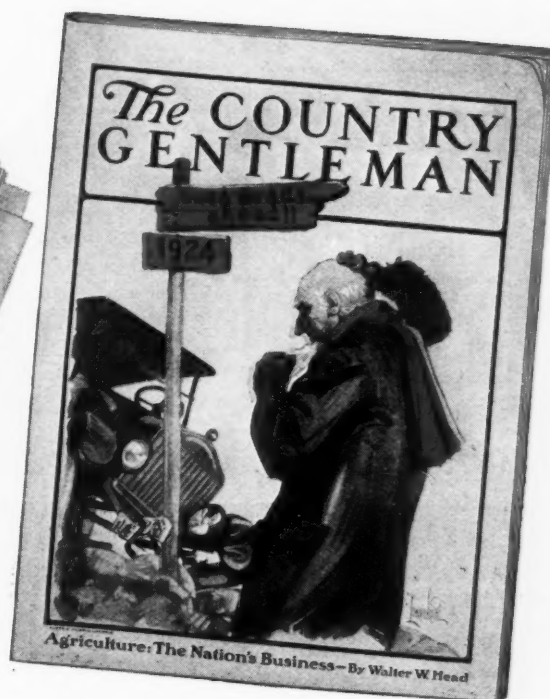
STEWART-WARNER SPEEDOMETER CORPORATION
CHICAGO, U. S. A.

Stewart
CUSTOMBILT ACCESSORIES
USED ON 9 MILLION CARS

for 1924

to your door

Stewart
SORIES



Sell—

Stewart Custombilt Accessories.

This immense advertising campaign, the greatest ever attempted by any accessory manufacturer, will make them the easiest selling, most profitable line of accessories you could carry.

Don't stand aside and see others cash in

on this advertising. Stock Stewart Accessories. Put them on display. It will pay you well.

The Stewart name is a standard for highest quality. Stewart Accessories will help build up your business, prestige and profits.

STEWART-WARNER SPEEDOMETER CORPORATION
CHICAGO, U. S. A.

Stewart

CUSTOMBILT ACCESSORIES
USED ON 9 MILLION CARS

FYRAC

THE
SUPER
SPOTLIGHT

Night GUIDE

THE
SUPER
SPOTLIGHT

Lights the Way to Dealer Profits

Keep Your Eye on Jan. 26 Post!

FYRAC

Night GUIDE

the Super Spotlight



Fits through your
windshield glass



The Fyrac Night Guide is manufactured under seal and protected by Fyrac Company patents and applications. Instructions will be given.

When the Moment Comes

A COUNTRY road—or darkened, sidewalkless street; who knows at what moment a pedestrian will be in your path? He does not realize how difficult he is to see—or that you may be blinded by oncoming headlights.

Many accidents occur this way. Most of them could be avoided through use of the Fyrac Night Guide. Trained over the right-hand road-edge, the Night Guide is a never-failing "eye" when otherwise you would "go it blind."

The Fyrac fits through your windshield glass—is controlled from within the car. Always in use—never hampered by curtains or closed windows. With the Gun Grip at your finger ends you can shoot its 1500-foot beam in any direction, and it "stays put," secure against road shocks.

Installed at dealers' while you wait, without removing the windshield. Price \$12.75 installed. We guarantee the Fyrac Night Guide and the windshield in which it is installed.

Fyrac Manufacturing Company, Rockford, Illinois

Another big wallop in our full page Saturday Evening Post campaign! This one appears week after next, January 26 issue.

Here at the left is a photograph of it, cut way down in size. But you really must see the AD ITSELF to appreciate how forceful it is. So look for it in the Post.

Note how our advertising puts across the night-time safety idea—and especially the *through-the-windshield-Fyrac* idea! Fyrac advertising is opening big new avenues of profit to Night Guide dealers everywhere. Are you getting your share?

Here's What Gets 'em!

This sales-making display stand hooks up your store directly with our full page Saturday Evening Post advertising. It tells your customers you sell the Fyrac Night Guide, the *super* spotlight!

This display is supplied free with an initial order of Fyrac Night Guides. A piece of plate glass through which the Fyrac may be fitted forms part of the display.



Full page advertisement—January 26th
THE SATURDAY EVENING POST

FYRAC

THE
SUPER
SPOTLIGHT

Night GUIDE

THE
SUPER
SPOTLIGHT

Lights the Way to Dealer Profits

GUARANTEED AGAINST WINDSHIELD BREAKAGE

We unreservedly guarantee the Fyrac Night Guide and every windshield in which it is installed. An iron-clad guarantee, protecting you fully against the possibility of windshield breakage, accompanies every shipment.

The Fyrac Glass Cutting Tool is so efficient in operation that we have no hesitancy whatever in backing you 100% against windshield breakage. No other through-the-windshield spotlight gives the dealer this pro-

tection.

With ordinary care in installing the Fyrac Night Guide, there is not the slightest danger of windshield breakage. A careful check-up has proved this conclusively. But to reassure every dealer and every purchaser we have instituted the guarantee feature, in effect an insurance policy covering every windshield in which a Fyrac Night Guide is installed.

What more could you ask?

18 PROFITS IN 2 DAYS

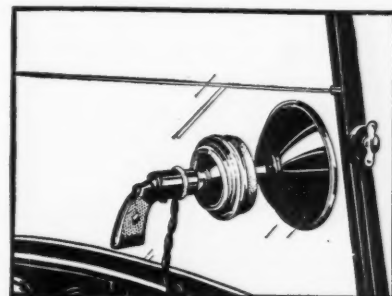
—that's what J. G. Wollaeger Co., Studebaker dealers in Milwaukee, made on the Fyrac Night Guide recently when they sold 18 Fyracs in two days.

"Gentlemen, we congratulate you on an excellent article," is the way this firm expressed themselves to a Fyrac representative.

J. G. Wollaeger Co. are installing Fyrac on all closed cars, and find that it helps them to make car sales.



To the left is the four-story edifice devoted to the sale of Studebaker cars in Milwaukee.



Why It Sells To Every Car Owner

Every owner of a motor car is a prospect for the Fyrac Night Guide. This is true even if he already owns a spotlight.

A spotlight is most needed in stormy weather. Side curtains and closed windows put the old-fashioned spotlight out of reach. And when a spotlight is out of *reach*, it is out of *use*.

The Fyrac Night Guide, on the other hand, is always in service, unhampered by curtains or closed windows. That's why it sells so easily. It fits through the windshield glass—is controlled from inside the car.

Why sell a motorist any other than a 100% serviceable spotlight? Why take any less than the profit you make on the Fyrac?

Extra Profits in the Service Dept.

Whenever a car comes in for service work, ask the owner if you can install a Fyrac Night Guide while his car is in the shop. Show him the Fyrac and explain its advantages. If the car has been brought in for repairs after a night-time accident, you'll find a particularly ready response to your suggestion.

WRITE!

If there is any information of any nature you would like pertaining to the Fyrac Night Guide, drop a line to the Fyrac Manufacturing Co., Rockford, Illinois. We'll send it promptly and gladly.



22 makers of automobiles provide this time-saving cap on their cars



Dill Standard tire valve and valve inside. "The combination that holds inflation".

THESE manufacturers appreciate the tremendous convenience of the Instant-on. They are making it as easy as possible for owners of their cars to take care of tire inflation and tire changes.

Just a twist or two, then a pull, another turn and the Instant-on is off. It goes on again just as easily.

Dealers are finding a ready sale for Instant-ons to every car owner. They are packed for resale in attractive display boxes containing 12 sets of five each. Each set is individually boxed. Order a display box from your jobber.

Retails at one dollar for a box of five.

THE DILL MANUFACTURING CO., Cleveland, O.

Also Manufacturers of Dill Standard Tire Valves and Dill Valve Insides
 Manufactured in Canada by The Dill Manufacturing Co., of Canada Ltd., Toronto

DILL

Tire Valves and Valve Parts

Suits every autoist to a



He gets the fine utility of an easy-filling, theft-proof radiator cap that needs no key. You express your sense of beauty and regard for personality in giving **MONOGRAM ORIGINAL Self Locking Radiator Cap** with its aristocratic art initial, and its massive ball-end sport bars smartly distinguish any car. A gift of beauty, utility and personality for every autoist friend. \$6.95 where good auto goods are sold. The name Monogram must be in the metal. Persist—only the original has the features you want.



Attaches
Instantly—
No Tools

All Caps
All Initials

joy

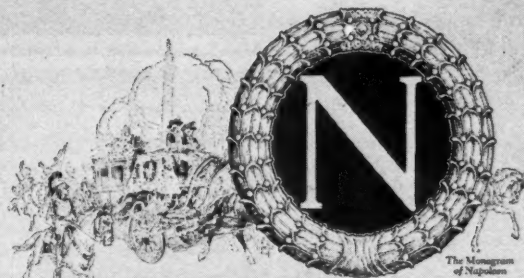
Makes the motor meter theftproof without a key to carry. Persists up any car with its gleaming ball-end sport bars. Radiates individuality from its rich art initial. Motorists are unanimous on the stunning style and true utility of **MONOGRAM ORIGINAL Self Locking Radiator Cap**.

What a gift for Christmas! You'll want one for every autoist friend—reserve enough caps now. Featured at \$6.95 where quality auto goods are carried. The name Monogram must be in the metal. Persist—your dealer should have the original.

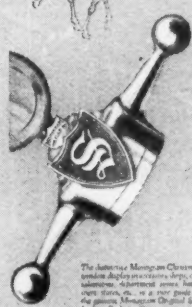


All Caps
All Initials

Fills Without
Unscrewing



What's in a Name? —a Monogram



The authentic Monogram Christmas presents include a genuine Monogram Original Self Locking Radiator Cap.

Five letters are the biggest things in names—Monogram! As individual as the name itself.

There is the true touch of personal consideration in your giving when the gift is a Monogram Original Self Locking Radiator Cap. Its rich old text initial is undeniably the art lettered shield surrounding massive ball-end sport bars proudly perks up any car.

To all of this heavy Monogram Self Locking Cap adds real utility. It stops the motor center dead, yet there is no key annoyance!

It fills without unscrewing. It attaches instantly, without the use of any tools.

Such a gift, practical, handsome, immense, bespeaks clever understanding. There is a Monogram Self Locking Cap with the right initial for every car owner you are remembering. Good motor centers feature the original. It has the name MONOGRAM in the metal always—persist. Do not risk scarcity of the initials you want—buy for every autoist friend now before stocks are depleted.

GENERAL AUTOMOTIVE CORPORATION, Chicago

MONOGRAM

Original Self Locking Radiator Cap

Smart

Personalized by its art initial. Beautiful with its massive ball end sport bars. And theftproof though it needs no key.

MONOGRAM ORIGINAL

self locking radiator cap dovetails adorably with every motorist's pet idea of good looks and utility. It cannot improve a car more noticeably. Smart shoppers are listing Monogram now as the star gift this Christmas for every autoist friend featured where good auto goods are sold. Persist—you do want Monogram. Your dealer should have the original—the name must be in the metal.



Any Initial
Easily
to Fill

Attaches Instantly
No Tools

Reproductions of Monogram Advertisements Appearing in The Saturday Evening Post and Other National Publications

More Millions

Monogram publication advertising is only one of the vigorous, dominant, Monogram sales policies. Monogram displays—window, counter and showroom—Monogram literature, Monogram service inspectors, are a few of the things now giving the trade a new idea of intelligent co-operation.

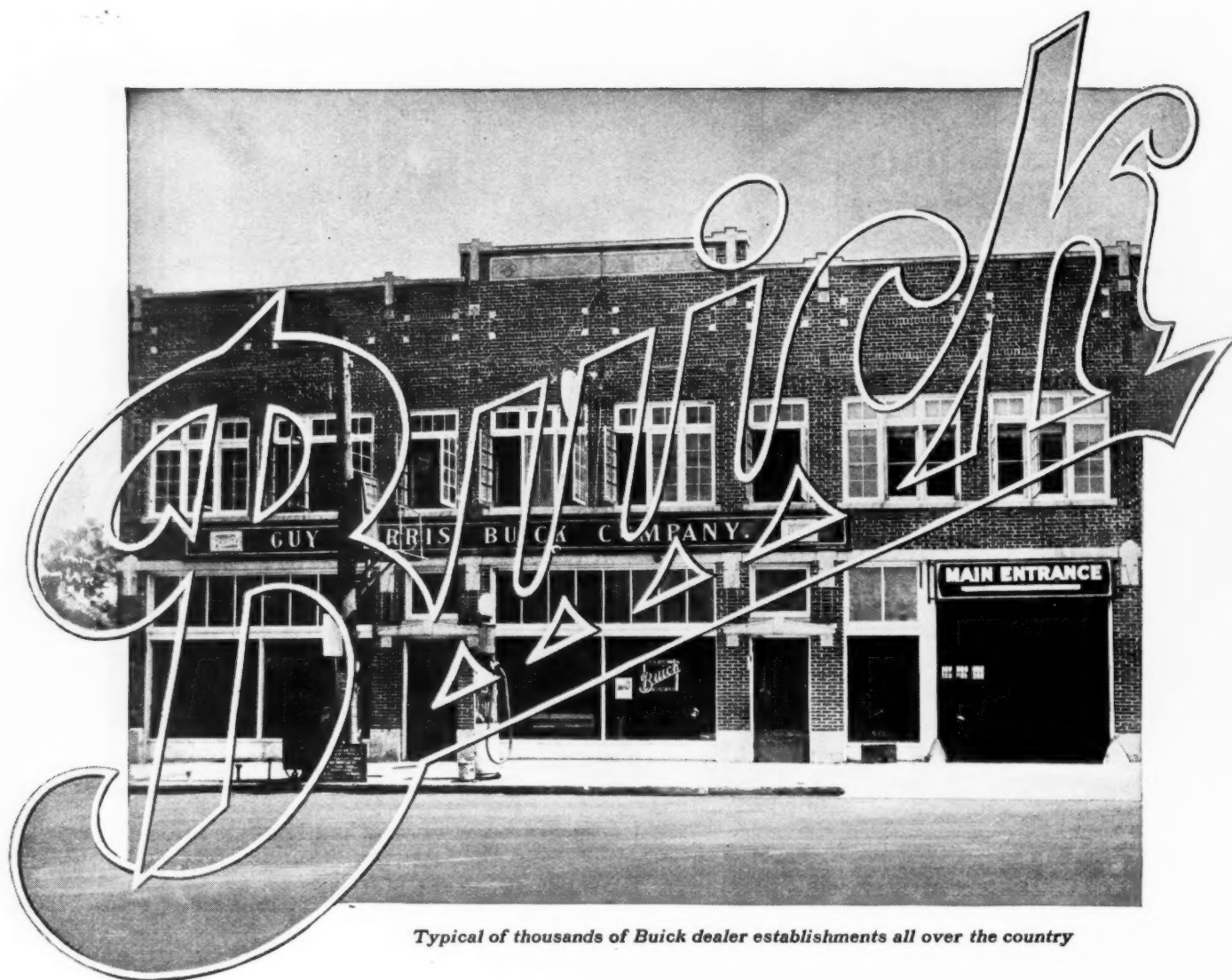
Add the fact that Monogram Caps are increasingly beautiful, distinctive, and useful. And you can see for yourself why Monogram Original Self Locking Radiator Caps will make more millions for the trade this year. How about your share? Ask your distributor.

General Automotive Corp., 600 W. Jackson Blvd., Chicago

MONOGRAM

ORIGINAL

SELF LOCKING RADIATOR CAP



Buick Reputation Brings Prosperity

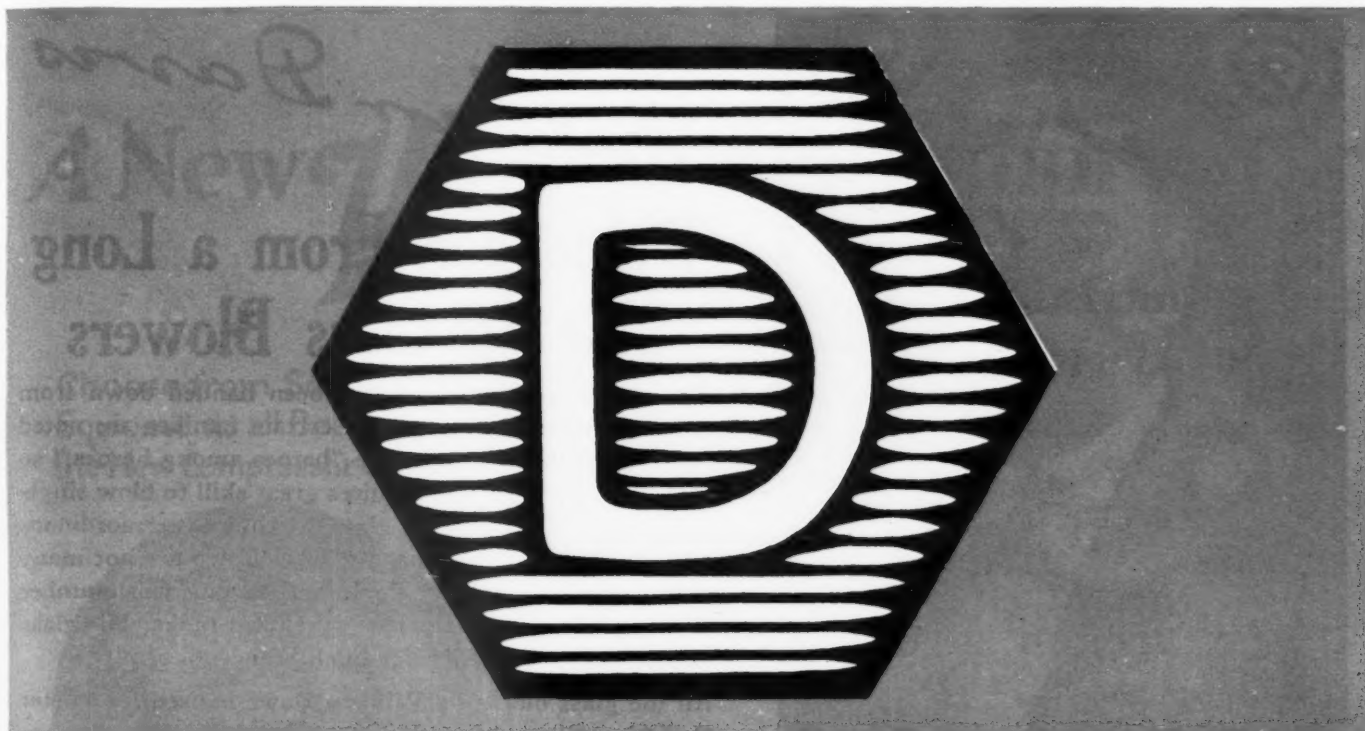
For twenty years, Buicks have had the reputation of "getting you there and back". People everywhere regard Buick as a sound and dependable investment in personal transportation. That is why over one million Buicks have been sold—why Buick dealers are satisfied and prosperous. Why not have your name on file?

BUICK MOTOR COMPANY, FLINT, MICHIGAN
Division of General Motors Corporation

Pioneer Builders of Valve-in-Head Motor Cars

Branches in All Principal Cities—Dealers Everywhere

WHEN BETTER AUTOMOBILES ARE BUILT, BUICK WILL BUILD THEM



This Mark on a Spring Tells You "It's Built to the Car Maker's Specifications"

Genuine Detroit Springs are now easy to identify.

The letter "D", raised on the hexagonal head of each clip bolt, is a simple, positive and permanent means of recognizing them.

When you see a replacement chassis spring so branded, it is your positive assurance that it is a Detroit Spring—and that it duplicates the car or truck builder's specifications for his original equipment springs in every particular—length, width, number and thickness of individual leaves, camber and type of steel, alloy or carbon.

If you want to be *sure* that a replacement spring is built to *your* car maker's specifications, look for the raised "D" on the hexagonal clip bolt head.

DETROIT STEEL PRODUCTS COMPANY
2268 East Grand Blvd. Detroit, Mich.



BUILT TO THE CAR MAKERS' SPECIFICATIONS



William Davis

Descended From a Long Line of Glass Blowers

The art of glass blowing has been handed down from father to son for so long that certain families are noted for their skill. But there are "heroes among heroes," so to speak. For, while it requires great skill to blow single and double strength sheet glass, it requires extraordinary skill to blow *triple* strength glass. There are not many glass blowers who can do it and among this number William Davis holds a place in the front ranks. His glass has never been excelled for quality and uniformity.

All the glass blown by William Davis is used for Porter Redi-Cut Glass. In addition, there are other famous glass blowers who produce triple strength glass, all of which becomes Porter Redi-Cut Glass for Ford replacements.

YOU CAN DEPEND UPON THE QUALITY OF PORTER GLASS

Porter Redi-Cut Glass has earned its own reputation for quality and uniformity. Porter Redi-Cut Glass is genuine hand-blown crystal sheet glass and is recognized as the peer of all hand-blown crystal. It is *triple* strength and cut to exact pattern with proper edges finished. You can depend on the uniform high quality.

Jobbers receive Porter Redi-Cut Glass in standard packages which may be shipped to dealers without repacking. The dealer places the package in stock and does not have to remove the glass until a replacement job comes in. There is no cutting to do. The dealer simply puts the glass in place. Porter Redi-Cut Glass is furnished for windshields and bodies of all Ford models. Leading jobbers everywhere carry stocks.

The Porter Method of Packing Minimizes Breakage

This is an important feature of Porter service to the automotive trade. Expert glass packers have developed this method of packing and as a result there is rarely any breakage. Each package is plainly labeled as to contents.



PORTER MIRROR & GLASS CO.

Fort Smith, Arkansas

AUTOMOTIVE DIVISION—3124 LOCUST BLVD., ST. LOUIS, MO.



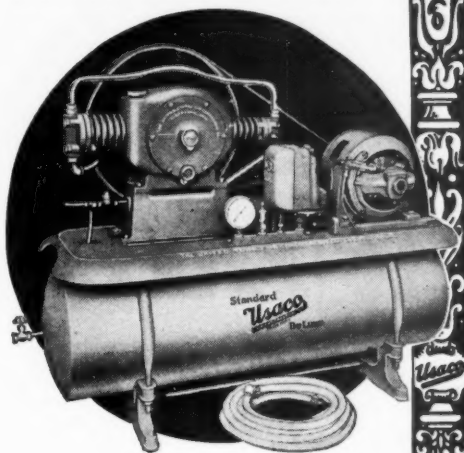
PORTER REDI-CUT GLASS

FOR FORD REPLACEMENTS

A New *Usaco* Air Compressor

AIR COMPRESSORS

Choose from Several Equipments all Bearing the New Compressor Unit



"Standard" De Luxe

Displacement, $3\frac{3}{4}$ cu. ft. per min.; Motor, $\frac{3}{4}$ H. P.; Dimensions, 52x20x39 in.; Tank, 30 gallon capacity for 200 pounds working pressure; Net weight, 420 pounds.

"Greater" De Luxe

Same as "Standard" but with 1 H. P. motor. Displacement, 5 cu. ft. per minute.

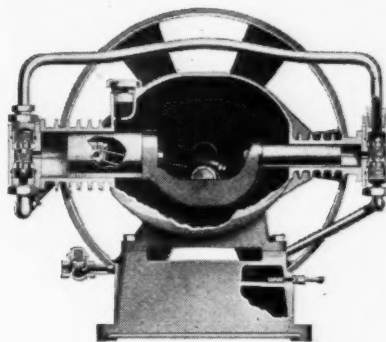
"Sixty" De Luxe

Same as "Standard" but with 60 gallon tank, giving much greater reserve storage capacity; $\frac{3}{4}$ H. P. motor. Displacement, $3\frac{3}{4}$ cu. ft. per min., working pressure, 200 pounds.

"Giant" De Luxe

Displacement, 5 cu. ft. per min.; Motor, 1 H. P.; Dimensions, 52x25x46 in.; Tank, 60 gallon capacity for 250 pounds working pressure; Net weight, 609 pounds.

The World's Best Air Compressor
Made Better Than Ever Before!



SOME years ago this company Pioneered the way by introducing an air compressor of new design which has since become generally recognized as the unquestioned leader—a machine that has been widely imitated but never equalled.

Now, we are blazing another trail in the introduction of a new machine—the same in fundamental principles but as far superior to the previous compressor as the original model was then in advance of the field.

Of definite interest are: **The Plate Valves** of new and simplified design, which result in increased efficiency; the **Regulated Pin Splash Oiling System**, a greatly improved method of lubrication; the **Rigid Piston Assembly**, an exclusive feature that results in long life; the **Improved Copper Intercooler** of original and simplified design and other features that make it, without question, the most efficient,

most quiet air compressor ever designed.

Air compressor users, tire dealers, filling station operators and jobbers, don't buy a single compressor until you get the complete story of this remarkable machine in the new catalogue just off the press.

Send for it to-day.

Please send literature on new compressor, also new Catalog advertised in Motor Age to — name written in margin

The United States Air Compressor Co.

5304 Harvard Ave.

Cleveland, O.



The Weld That NEVER FAILS

Why the head and stem (of different metals) never separate in a Toledo Standardized Valve

YOU can batter the head and bend the stem of a Toledo Standardized Valve but you can't loosen them or get them apart.

Toledo Valves are electrically welded ENTIRELY THROUGH the head. The bond is complete and perfect. An example of the practical indestructibility of the bond in a Toledo Standardized Valve is shown by the hammer and vise test. Screw the special process head into a vise and try to hammer the steel stem loose. It can't be done.

Toledo Standardized Valves render the

same remarkable performance in the motor. The heads will not come loose. A fine quality gray iron head and an S.A.E. carbon steel stem put together in the Toledo way offer more valve service for every dollar invested than any other valve you can buy.

Made for all cars, trucks, tractors and motors. Each valve stamped with its number, slushed in high-grade rust preventive, wrapped in kraft and packed in a neat carton. Sold by the best jobbers everywhere. Write for our service station proposition.

**The Toledo Steel
Products Company**

Toledo, Ohio

TOLEDO *Standardized* **VALVES**
Valves Exclusively for Over 9 Years

"I now make up my cash 4 to 6 times quicker"

*Enterprising St. Louis
retailer praises
the wonderful*

**Theo. R. Schwerdtmann,
St. Louis, Mo.**

Sundstrand

Adds COMBINATION Multiplies
CASH REGISTER
Forced Indication Automatic Control

In the letter reproduced at the right, one of America's representative retailers tells of the time-saving, money-making service rendered by his Sundstrand Combination Cash Register.

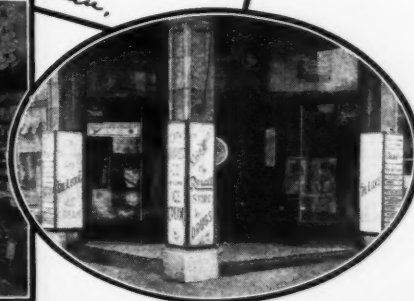
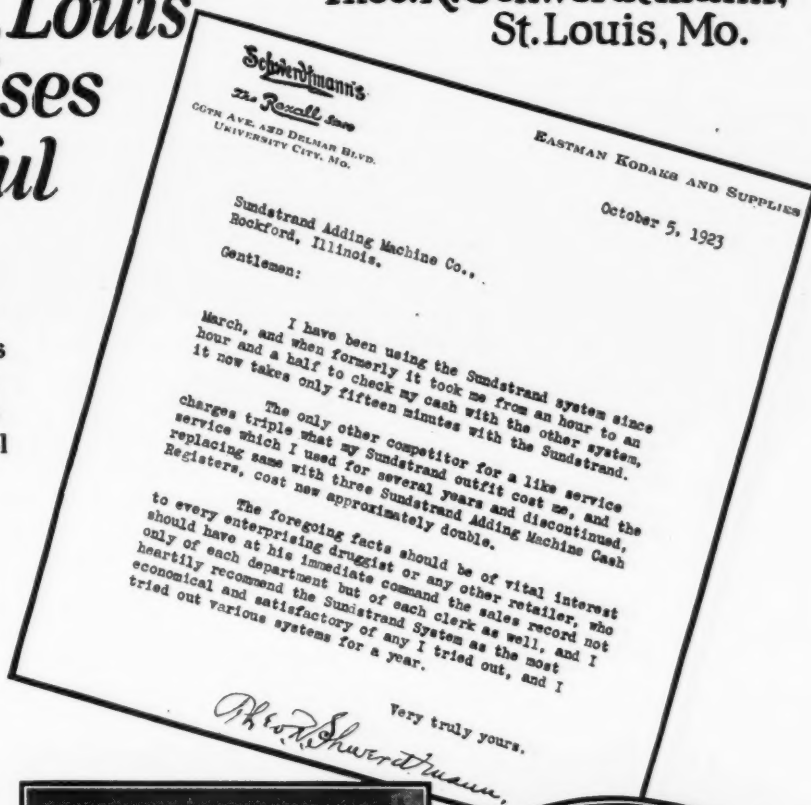
This wonderful machine stops guesswork and increases profits, because—

- 1—It gives complete cash register protection, PLUS adding machine convenience, in ONE machine, at ONE low cost.
- 2—Shows how many customers and classifies sales by departments and clerks.
- 3—Makes a non-erasable record at time of transaction.
- 4—Indicates and records cash, credit, paid out, received on account.
- 5—Automatically excludes from cash total—money paid out, charge items, etc.
- 6—Cash total can be read at any time.
- 7—Records additions and multiplications on right-hand tape.
- 8—Records cash register transactions on left-hand tape.
- 9—Cash register tape rewinds in machine and is held under lock and key.
- 10—Simple, speedy—records sales from 1c up—capacity \$99,999.99.
- 11—Complete credit file for handling credit accounts.

What Sundstrand is doing for Schwerdtmann of St. Louis, it is doing for thousands of keen retailers all over the country. A demonstration will prove a revelation to you. Address Dept. M.

**SUNDSTRAND ADDING
MACHINE COMPANY**
Rockford, Ill.

Sales and Service Stations throughout the
United States and Canada



Interior and exterior
views of Schwerdt-
mann's, 66th Ave.
and Delmar Blvd.,
St. Louis, Mo.



ELWOOD HAYNES, PRES.
C.C. CARTWRIGHT, VICE PRES.

ALTON G. SEIDERLING, VICE PRES.

A.E. STARBUCK, SECY. & TREAS.
MARCH HAYNES, ASST. SECY. & TREAS.

THE HAYNES AUTOMOBILE COMPANY

MANUFACTURERS OF

HAYNES
MOTOR CARS

ADDRESS ALL COMMUNICATIONS
TO THE COMPANY

KOKOMO, IND.

Mr. Automobile Dealer:

Hundreds of Dealers have wired for information regarding the Haynes Merchandising Plan.

If you have not, will you do me a personal favor?

Pencil me a few lines and mail them to me, telling just why you are not at all interested.

Is it because your profits on the cars you now handle are entirely satisfactory?

Is it because your volume of business in 1923 was the largest that you'd care to swing?

Is it because you have any prejudice against making more money, more net profit?

Or is it simply because you think my talk about the Haynes Merchandising Plan is "bunk," and that we have nothing out of the ordinary to offer you?

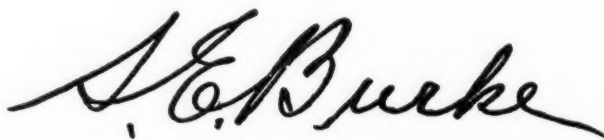
Please tell me, straight. I want to know.

Also, after writing you so many letters, I confess I'd like to get a line from you if only for the novelty of it.

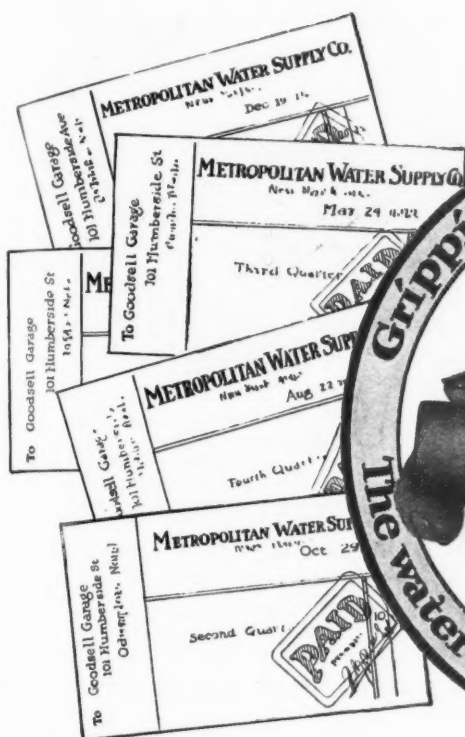
Thanking you in advance for your reply, I am

Yours very truly,

THE HAYNES AUTOMOBILE COMPANY,



General Sales & Advertising Manager.



A GREAT time saver as well as a hose saver! The GAYLORD IDEAL OVERHEAD WASHER swivels in a 9 ft. circle, enabling the car washer to get at all sides of the car with a short hose. The light moves with the washer—electric contact by means of a rotor brush. Used with the "Little Giant Water Saver," it is the lowest priced overhead washer with water saving feature. No danger of overhead leakage because water is controlled *automatically* at the end of hose and not by overhead mechanism. Order thru your Jobber.

No. 1, without counterbalance...	\$12
No. 2, 1/2 in. size.....	14
No. 3, 3/4 in. size.....	16
No. 4, 3/4 in. size, with electric light equipment	34

Cut your water bills in half

Send for "BEATING THE WATER METER"—our free booklet which tells about these and other water saving devices. Simply fill in and mail coupon below. Mention whether you wish us to send a "Little Giant" on approval.

THE Little Giant Water Saver will cut your garage water bills in half by stopping the water waste.

The Little Giant doesn't have to be "operated." You just screw it on the end of your water hose and it saves water AUTOMATICALLY.

Water can't get by the Little Giant unless you allow it to, that is, unless your hand is ON the valve. To stop the water, you just release the grip. It's a back-checking type and the water automatically closes it.

The grip is comfortable. Metal parts are of brass; washers are reinforced. The red rubber hose nozzle prevents metal touching car. The List price is \$3.00.

Jobbers: Write for our attractive sales proposition!

THE GAYLORD MFG. CO., Paterson, N. J.

GAYLORD LITTLE GIANT Water Saver



THE GAYLORD MFG. CO.,
PATERSON, N. J.

Am interested in saving water. Send me your free booklet "BEATING THE WATER METER." You may send a Little Giant on approval to be paid for at \$3.00 list less our dealer's discount of 25% if we furnish you the name of our jobber. It is understood we can return the Little Giant for full credit if not satisfied any time within two weeks.

Name.....

Address.....

Jobber's Name.....

Jobber's Address.....

TWELVE SIZES

will equip any car manufactured during this and the past Seven Years.



"Perfection" Pedal Pads

make more money for the Dealer!

A small stock to carry—extremely popular prices—quicker turnover—a size for *every* car—no bolts—no drilling—just bend the prongs and they're on to stay.

"Perfection" Pedal Pads comprise a line so complete that you can't miss a sale. They are very well made—handsomely finished—sell fast—and build up your profits.

From the lowest to the highest priced car—you satisfy your customers with this standard line.

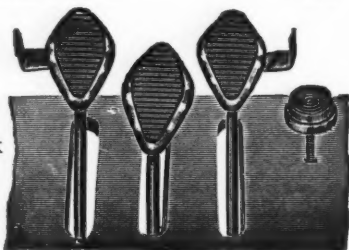
Write for catalog and discounts today.

Auto Pedal Pad Co.

318-320 West 52nd St.

New York City

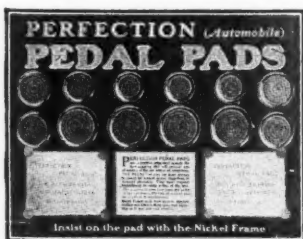
The New
"D" Hook



\$1.00
per set

Provides a comfortable rest for the foot and relieves muscle tension. Attaches without bolt or drilling—just bend the prongs. A great convenience and a rapid seller in a big market. \$1.00 per set.

This Display Board, Accelerator and Starter Pads, 12 assorted sizes, \$6.00



These pads are made in sizes to fit accelerator or starter for every make of car. Strong, well designed, heavy rubber pads set in nickel frame. Makes control of the throttle easier and more certain. Price 50c. each. Stock only 12 sizes, and you can equip any car that has been manufactured during this and the past Seven Years!

"PERFECTION" PEDAL PADS

Insist on the Pad with the Nickel Frame



Finding That Elusive Short Circuit

THERE is no uncertainty or guessing when you have a Weston Model 280 Testing Set.

Not only the quickest, most accurate and efficient outfit—but the most compact, complete and versatile. Really a miniature precision voltammeter having six ranges, 30 and 3 volts—100 milli-volts—and 300, 30 and 3 amperes.

Locates shorts, grounds, open circuits in starting motor, generator, wiring or auxiliaries. Gives rate of battery charge. Tests condition of batteries. Locates defective plates. Measures current required for starting motor, lights, etc. Cadmium test cables also supplied, if desired.

Send for Booklet H

It illustrates, describes and gives prices of all Weston instruments and accessories for automotive service. If only to be properly informed, you need this booklet.

Weston Electrical Instrument Co.

10 Weston Ave.

Newark, N. J.

Branch Offices in All Principal Cities

WESTON

Electrical Indicating Instrument Authorities Since 1888

STANDARD—The World Over



This Famous Sales Builder— now in another size—this Walker Counter Display

The original Walker Jack Merchandiser was the sensation of the jack business in 1923. In less than six months over 8,000 dealers installed it. All agreed it sold more jacks than any one thing they had seen in their experience. Many reporting increased sales on jacks as high as 500 per cent.

Now a nation-wide demand has brought out the original Merchandiser's little brother—the new Counter Display illustrated above.

Costs the dealer nothing

The Walker Counter Display holds 5 jacks and comes to the dealer free, with an assortment of 10 jacks—5 different types.

What the jack business needed

A year ago we told the trade that the automobile jack had been a too-much-neglected item, principally because dealers had no practical way to display jacks. The Walker Display is our solution of the problem.

Send for Illustrated folder

We are ready to send you a large folder with all the details about the Walker Counter Display, giving the experience of dealers in all parts of the country. Write for it today, or ask your jobber's salesman.

WALKER MANUFACTURING COMPANY, Racine, Wis.



Walker JACKS

"Dependable in Emergencies"



You can't beat a leather fan belt

YOU can't compete with nature in the making of belts. Nothing has ever been made, or ever will be made to give the service—the long wear, the grip and pull—of honest leather.

And drivers are realizing this now as they never have before. They want *leather fan belts*—Graton & Knight fan belts.

The display case above is to help you tell the world that you have what it wants. In orderly array, well displayed, is fan belting that you can talk about and that will back up in service what you say about them.

The famous Graton & Knight Link "V" belt in the display case is one of the fastest sellers, and one of the most profitable ones, you ever handled. Of wonderful strength, easy to make endless, noiseless in operation, almost indestructible—the Link "V" has friends everywhere.

Ask your jobber about the Graton & Knight display case. Get yours now.

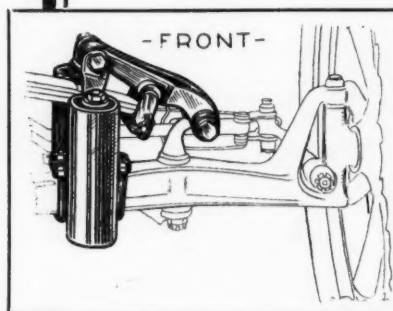
GRATON & KNIGHT
WORCESTER, MASS.



Nothing takes the place of Leather

NEW DIFFERENT BETTER VESELY Shock Absorbers For Fords

A new application of the double lever principle is used, which engineers have pronounced a long step forward in spring construction. The Ford does not sidesway, and rides smoothly over very rough roads when equipped with Vesely shock absorbers.



The profits are mighty good, too, and the repeat business excellent. Fifteen days free trial helps to start them going, and their performance attends to the rest. One Ford-owner tells another. Get a dozen sets now.

Territory is still open to hustling live wire representatives.

Manufactured by
Vesely Shock Absorber Co.
CEDAR RAPIDS, IA.

J. L. LEHMAN & CO., Sales Representatives
CEDAR RAPIDS, IA.



Rough on Porcelain

Try this on your wife's fine china. Put ice on one side and turn a flame on the other. Raise it from zero to boiling temperature in one minute. That's about what a spark plug insulator has to stand, and if it cracks the plug is done for.

There's a special porcelain specially fired to withstand these temperature changes. Manufacturers can tell it at a glance, because every insulator made of it carries the figures "775."

Is there a "775" on each of your plugs? You needn't pay any more for plugs that have it. Take a look at them, and remember the number when you buy new plugs.

Frenchtown Porcelain Company
Trenton, New Jersey



STANDS THE TEST

"Established in 1910—
Busy Ever Since"

MotoreX Sales Kit

A "Custom-Built" Carrying Case for Automobile Salesmen

The SALES KIT, shown below, was designed because of an insistent demand by AUTOMOBILE SALESMEN for a compact, good looking case that will hold just the material they must have with them, to get the maximum of results from their efforts.

It has ample room for the factory literature, sales books, license applications, etc., but is neither bulky or unwieldy.

Construction and Equipment

Made of first quality, genuine cow-hide, water-proof, finished in rich, glossy mahogany.

The top is re-inforced by a steel rod running from end to end. The handle is riveted clear through the steel rod.

Four, letter-size compartments and a small pocket for business cards, are on the inside, also a pencil loop and pencil.

Each case is fitted with two correspondence folders and four index guides (for 4x6" cards) with celluloid tabs.

SPECIAL

Pocket for Prospect Cards

A special pocket for prospect cards is located on the back (outside) of the Sales Kit. It is equipped with four index guides, which allows the cards to be filed under "Prospect," "Canvass," "Owner Follow-up" and "File."

Every salesman will readily realize the convenience and advantage of this provision for prospect cards. Every card will be kept in perfect order and the day's work will be much more definite and systematic.

Your money will be REFUNDED, if upon inspection a SALES KIT is not satisfactory.

SALES EQUIPMENT COMPANY

5981-B Woodward Ave.

Detroit, Mich.



**GENUINE
COW-HIDE**

\$ 750
POSTAGE
PAID

Enclosed find \$ _____
address below
Name _____
Address _____
City _____ State _____
Sales Equipment Co., 5981-B Woodward Ave., Detroit, Mich.
for which send to the
MotoreX Sales Kits
Price \$7.50 Each, Postage Paid.

Selected for Fine Cars



\$5.00 List Price

Just notice the cars that are equipped with Detroit Tire Lock. Not only is this handsome lock standard equipment on several of America's finest cars but the owner who wants his car to look trim and attractive is the kind who insists on Detroit Tire Lock.

*Distributors—Jobbers
Our Proposition Will Interest You*

DETROIT CARRIER & MFG. CO.
Detroit, Mich.



**DOES SOLDERING IN
ONE QUARTER
THE USUAL
TIME**

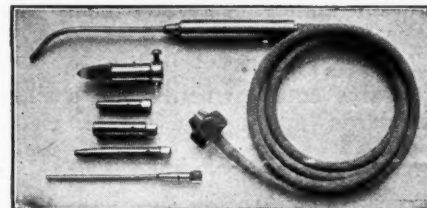
TORIT TORCH OUTFIT No. 13

Whether the job is lead burning, battery sealing, fender straightening, radiator soldering or loosening a rusty or corroded nut, the Torit, No. 13, torch is always ready at a second's notice to serve you, and the price is wonderfully low. It is handy for soldering tinware, babbiting, joining light tubing, aluminum soldering, soldering electrical connections, etc.

USES ACETYLENE ONLY

A splendid use for discarded auto acetylene tanks. Many owners make the Torit, No. 13, pay for itself in a single day. Torch, with 4 different tips, soldering copper, 5 ft. tubing and connection for auto acetylene tank.

\$7.50



ORDER YOUR TORCH TODAY
St. Paul Welding & Mfg. Co.
169 W. Third St., St. Paul, Minn.



Designed and Built Right

This crane is our special garage model, designed particularly to fit the requirements of garage and repair shop service. Forgings and semi-steel castings are used liberally in its construction. You will find many features in this crane that are not to be found in the average portable crane.

With this piece of equipment one man can do heavy lifting that would otherwise require four or five men. It will save so much time and money for you that it will soon pay for itself.

Write for catalog and complete information

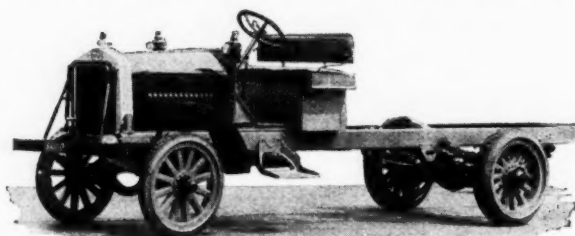
Canton Foundry & Machine Company
Canton, Ohio

New York Office 203 E. 15th St.

CANTON

**PORTABLE
CRANE & HOIST**

MASTER TRUCKS Balanced Oversize



SPEED MASTER— $\frac{3}{4}$ — $1\frac{1}{4}$ ton

Highest Achievement for fast freight transportation

HEAVY DUTY MODELS— $1\frac{1}{2}$ to 6 ton

A revelation to Motor Truck Buyers

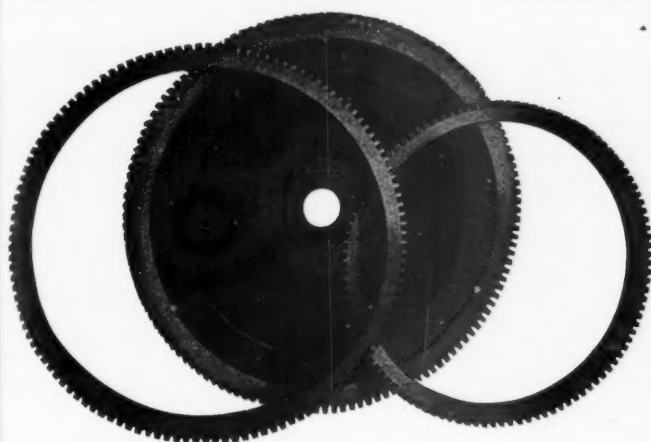
Highest grade recognized standard units used throughout. Built by a responsible Company of unquestioned financial stability.

Valuable Territory Open to Responsible Dealers

MASTER MOTORS CORPORATION

2381-2399 Archer Ave.

Chicago, U. S. A.



New Low Prices On Fly Wheel Rings

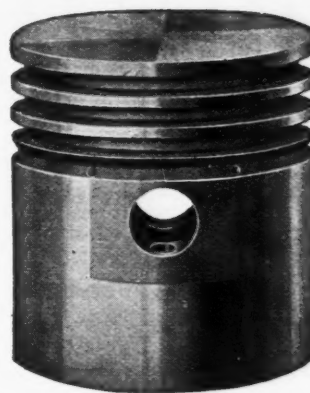
Increased quantity production has enabled us to get out a new and lower price list on Meachem Steel Gear Rings for Fly Wheels. Also our trade discounts have been increased to more than offset the lower list prices. Write us for the new list and discounts.

The Meachem Gear Corp'n.
Ring Dept. Syracuse, N. Y.

ACCURATELY
DALL
MACHINED

**SEMI-STEEL
REPLACEMENT PISTONS**

ACCURATELY
DALL
MACHINED



For replacement work after a rebores or re-grind job insures your customer as good if not a better job than the original assembly.

Dall Pistons are simply GOOD Pistons, made to manufacturer's specifications, sometimes more refined in design and lighter in weight, but always as carefully made and inspected as though they had to pass the most rigid inspection of a Motor Manufacturer.

Dall Pistons are regularly furnished in standard and various oversizes, also semi-finished 1/16 oversize.

Write today for price list and delivery schedule on all items. Distributors at various points will take care of your requirements.

THE DALL MOTOR PARTS COMPANY

Post Office Station D, Cleveland, Ohio
Southwestern Branch
THE CARROLL CO.
2218 S. Harwood St., Dallas, Texas

30%
Longer Life
25%
More Capacity



CONTINENTAL DEHYDRO PLATES

The plates are the battery. Their capacity governs the amount of work their life decides whether the buyer gets his money's worth. The entirely new process we use makes Dehydro Plates more porous and bone-dry, so they absorb more electrolyte and give off more energy.

INTRODUCTORY OFFER

Send for eighteen negatives and fifteen positives, put them through the hardest tests. We feel sure you will get results equal to or better than our claim of 30% longer life and 25% more capacity. The price is only \$5.00 F. O. B. St. Louis, cash with order. Send for these trial plates now, and be convinced of the extra money Dehydro Plates can make you.

"A Battery Can Be No Better Than Its Plates"



CONTINENTAL BATTERY CO.

3201-19 Papin St., St. Louis, Mo.

IN CLEVELAND- IT'S THE HOLLENDEN

Not Expensive

ROOMS—

Large comfortable and well-furnished:

83 Rooms, hot and cold running water, \$2.50
210 Rooms, single with bath, \$3.00 - \$3.50
192 Rooms, with bath - - - - \$4.00
160 Rooms, double, with bath, \$5.00 - \$6.00
135 Rooms, large double with bath, \$6.00 - \$7.00
Many Sample Rooms and Parlor Suites, \$7.00 up

BREAKFASTS—Club Breakfasts with generous portions at 65c, 75c and \$1.00.

LUNCHEONS—A la Carte in four nationally famous restaurants.

DINNERS—A la Carte. Special Sunday table d'hôte dinner at \$2.00.

CAFETERIA—Hollenden Cooking and Service at Cafeteria prices.

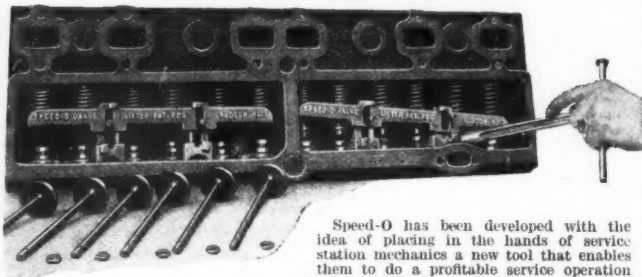
DANCING—Dinner Dancing with Carl Rupp's Hollenden Dance Orchestra every evening excepting Sunday. No Cover Charge.

ROSCOE J. TOMPKINS
Manager

SPEED-O

MULTIPLE VALVE SPRING LIFTER

Lifts 4 to 12 Valve Springs in Less Than 30 Seconds



Speed-O has been developed with the idea of placing in the hands of service station mechanics a new tool that enables them to do a profitable service operation with greater ease and comfort to themselves, and a greater return in profits to the service and repair shop operator. Figure out for yourself the saving in time, the increase in profit, and the satisfaction from your customers' point of view in a good job, well done, at a more moderate cost.

The worst part of valve grinding, namely, the removal and replacement of the springs, is eliminated, saving time, trouble and temper.

Why continue in the old way when Speed-O sets a new pace and makes possible a saving in time and labor.

Equip your shop with the Speed-O Multiple Valve Lifter and watch the results. Your time cards will show the difference in time saving, your costs in profit making. You'll be surprised how little it costs and how much it saves.

Manufactured by

SPEED-O MULTIPLE VALVE LIFTER CORP.
1926 BROADWAY, NEW YORK

JOHNSON Combination Bench Furnace

Does not require a Forced Air Blast

For heat-treating tools, gears, small parts, etc. The doors in the side of the hood enable the heating of long rods, axles or the sweating of joints. Will heat soldering coppers in the largest sizes, or melt 25 lbs. of soft metal, such as lead, babbitt, solder, tin, etc.



No. 118 Bench Furnace

Send for our complete catalog of Gas Appliances

JOHNSON GAS APPLIANCE CO.
Cedar Rapids IOWA

New Departure Ball Bearings



NOW IS THE TIME

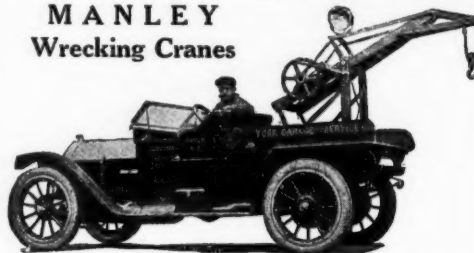
to be making the big profits from cylinder renewing. The winter months are most profitable to the man equipped to handle reconditioning and rebuilding jobs efficiently in his own shop.

Stormizing Machines

will handle all your cylinder renewing. They enable you to give better service in shorter time and at increased profits. Write today for the Storm Book: Modern Cylinder Methods.

STORM MFG. CO.
406 A Sixth Ave. So. Minneapolis

MANLEY Wrecking Cranes



Manley Wrecking Cranes will handle wrecks of any description with one-third the labor, and in one-quarter to one-tenth the time required by any other method. They are independent of road conditions; mud, snow, ruts, deep sand and chuck holes do not affect them. They are 100% method of handling wrecks.

MANLEY MFG. CO., YORK, PA.

Will pull cars up banks, out of ditches, right them when turned over, etc. The greatest money maker for the Garage in existence. Hundreds of Garages have paid the cost of the Manley Crane the first week put into operation.

Send for catalog.

Diogenes

Diogenes, a Greek Philosopher, used to walk the streets of Athens 2300 years ago with a lantern in his hand. On inquiry as to what he was looking for he used to say, "I'm looking for an honest man."

Through the ages his remark has been used as an example of humor and pessimistic utility.

Were he alive today he'd find his honest man in the old Anchor Bulb-maker. And with an Anchor Bulb other honest men, which his old lantern missed, would be revealed to him. For buyers who are groping in the dark for an honest light at a low price we recommend.



ANCHOR AUTO BULBS

"Triple-Tested" "Never Bested"

Anchor Electric Company
553 West Jackson Blvd., Chicago, Ill.



Effects of a Cause

The new Waukesha Bus and Truck Motor attains its almost incredible results because it is built to attain them. Likewise, maintain them.

Equipped with Ricardo Cylinder Head.

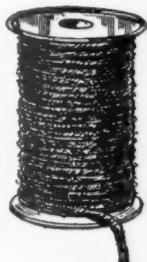
Write for Full Details

THE WAUKESHA MOTOR COMPANY
Waukesha, Wisconsin

Waukesha
TRADE MARK
BUS and TRUCK MOTORS

PERFECTION

"A Trouble Proof
Job That Stays Put"



PUMP PACKING

Does its work so well that every shop should at least try it. Jobbers everywhere putting it in because re-orders practically always follow first trial.

Perfection Pump Packing is a heavily graphited long-fibre packing. No granulation. No clogging or wearing of rods. Spools as shown in all usual sizes.

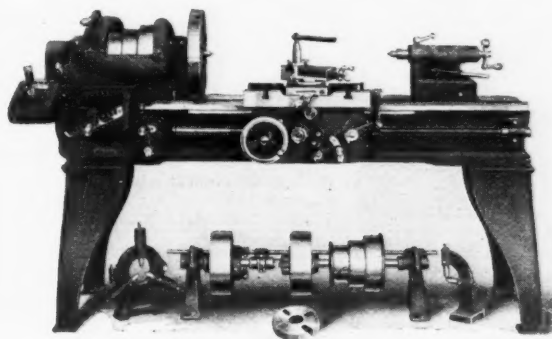
Ask your jobber or write us for information and for a convenient source of supply.

Advance Packing & Supply Co.
808 W. Washington Blvd. Chicago, Ill.

Pac. Coast Distributor: Allied Industries, Inc., San Francisco, Los Angeles, Seattle

C-J Profit Producing Lathes

Are Pioneers in their field, being the first modern Lathes to be adopted generally in auto service stations. A standard make, one of the oldest in the field, backed by many years successful service. Known and in use the world over.



13 inch; 15 inch; and 16 inch swing Quick Change Gear or Semi Quick Change Gear. ACCURATE; DURABLE; SIMPLE TO OPERATE.

Every worthwhile feature but not one superfluous feature is embodied in these quality Lathes.

HONESTLY BUILT HONESTLY PRICED
Write today for Special Garage Bulletin "M.A."

The Carroll-Jamieson Machine Tool Company
Batavia, Ohio.



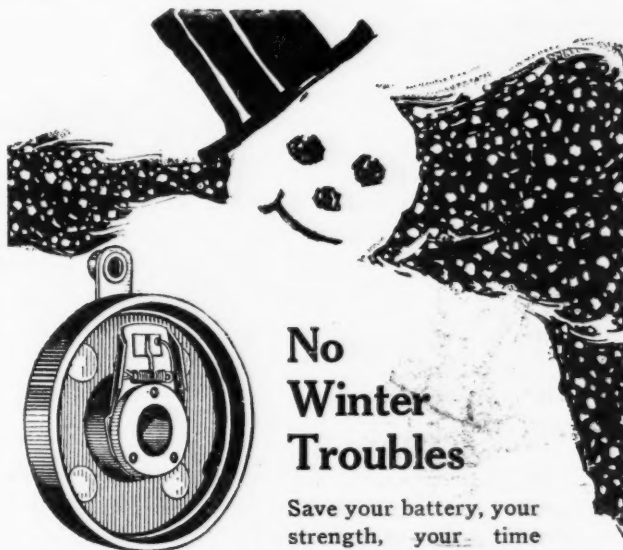
WHEREVER you are, Milwaukee Bearings are "not over a day away"! Four hundred distributors—covering every state in the Union—are ready at a moment's notice to serve you from complete stocks of "Milwaukees".

Did you ever have a customer who didn't want his car in a hurry? They all do! And right here is where Milwaukee Bearings keep promises for you.

And they're real bearings, too—virgin metal, ten times micrometer tested. Get our FREE car, truck and tractor list, with name of jobber stock nearest you.

Milwaukee Die Casting Co., Milwaukee, Wis.

MILWAUKEE Not Over a Day Away **BEARINGS**



No Winter Troubles

Save your battery, your strength, your time and your temper by installing

The BELL Timer

Bell-equipped Fords chuckle at wintry blasts. Their motors start and run with midsummer pep. No oil in this timer to gum up—smooth wipe contact and big hot sparks, always. Solid copper and solid bakelite, precision made.

Sold by leading jobbers and dealers.

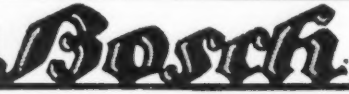
Bell Manufacturing Co.

13 Elkins St.

Boston

Mass.





Manufacturers insure the service of their ignition system by always specifying Robert Bosch.


ROBERT BOSCH MAGNETO CO., Inc.
The Genuine, Original Bosch
Otto Heins, Pres., 123 West 64th St., New York



EVERYDAY PISTON RINGS

Patented Non-leakable joint. Quick seating and self-adjusting to cylinder wear.

Write for particulars
ROYAL PISTON RING CO., Inc. Bath, N. Y.



EARN Big Profits With HB 8-Hour Battery Service

MAKE \$150 TO \$300 MONTHLY

Buy an HB 8-Hour Constant Potential Battery Charger on long easy terms, more than paid by big monthly profits. Small cash payment puts HB outfit in your shop, complete ready to connect up and operate. 30 days' free trial on money-back guarantee. Only \$20 monthly pays for your outfit. Write today for information.


HOBART BROS. CO.,
Box AR 124 TROY, OHIO

"It pays to buy a Kellogg"

KELLOGG

COMPRESSORS

Rochester, New York



PERMANITE

Transmission Lining for Fords never loses its firm, velvety grip.

The Rosendale-Reddaway Belting & Hose Company
NEWARK N. J.



Real High Tension Ignition for Ford Cars

Varley Transformers eliminate nearly all chronic ignition trouble. Save gas. Add power. Keep plugs clean. Stop misfiring. Save repairs. \$2.50 each. Write for full particulars.

The Autocoil Co., Jersey City, N. J.



WATERVLIET SPIRAL EXPANSION REAMERS

With self-cutting front pilots. Cut smoothly with shearing motion. Make piston pins fit.


WILL NOT CHATTER

Ask Your Jobber or Write for Literature
WATERVLIET TOOL CO., INC.
1035 Broadway, Albany, N. Y.
New York San Francisco
17-21 W. 60th St. 661-665 Turk St.

AXLE SHAFTS and SPRINGS

For all makes of cars. Keys, key-stock and nuts for all shafts. Differential gears for all cars.

BUTLER AUTOMOTIVE SERVICE COMPANY
Easton, Pa., 101 D Street



QUALITY—PROFIT—TURNOVER

American Hammered Piston Rings

American Hammered Piston Ring Company
Baltimore, Maryland



Barty Parts

Make a Better Axle

—they act as a differential semi-lock which makes your axle essentially a solid axle

on straightaways and allows the differential to function at the turns. Simple, easily installed. Get the details.

Barty Axle Corp.
Syracuse, N. Y.

BARTY CONTROL PARTS




QUICKLIFT Service Jack

A "SAFE" one stroke pry jack for all light cars. Instant adjustment—handle won't snap up and damage car. Made of steel—priced low. Write for catalog.

C. A. Dickerson Compressor Corp.
220 Chicago St., Buffalo, N. Y.

Did you see Vesta's story of the dealer who "turned 'em down cold"? You'll find it in last week's issue of Motor Age (Jan 3rd). It's worth looking up.

Vesta Battery Corporation, Chicago



Bedrick

HEAT-SHAPED PISTON RINGS

Exert an equal pressure on the cylinder wall at every point of its circumference

Write for particulars
Wilkening Mfg. Co.
613 N. 15th St.
Philadelphia, Pa.

THERE are two factors that determine the value of a publication as an advertising medium.

Editorial excellence will indicate its influence with its readers. Membership in the Audit Bureau of Circulations indicates its business ethics and methods.

The first shows whether the paper is worth reading. The second shows how many people read it. In both the advertiser is vitally interested.


MOTOR AGE invites the closest scrutiny. Its A. B. C. report is accessible to advertisers.



Lorentzen Headlight Kontrol

AN AUTOMOTIVE NECESSITY THAT SELLS

LORENTZEN HEADLIGHT KONTROL, INC.
60 Grand St. New York City



FEDERAL BUMPERS

Designed to answer the wants of the motorist. They provide the greatest protection to the car, yet their rugged strength is concealed by their lines of beautiful construction. They are the bumpers of today and tomorrow. Ask for Catalog No. 11.

METROPOLITAN and BROADWAY MODELS
FEDERAL PRESSED STEEL CO., Milwaukee, Wis.
Jobbing Division: London Guarantee & Accident Bldg., Chicago.

PARANITE CABLE

Best for Automotive Work

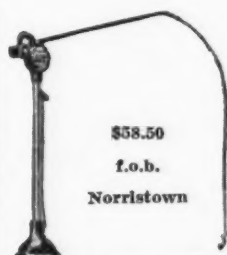
We carry at all times a complete stock of every kind of cable used for automotive work. Many years of specialization have brought **PARANITE** Cables to the highest state of perfection. The finest grades of rubber compound, cotton and flexible enamel varnish are used.



FOR 33 YEARS THE STANDARD

"IF IT'S **PARANITE** IT'S RIGHT"
Quality jobbers handle quality cable—that's **PARANITE**.

Indiana Rubber & Insulated Wire Co.,
Factory and General Offices—Jonesboro, Ind.



\$58.50

f.o.b.

Norristown

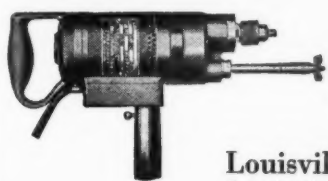
Franklin

The
Air and Water Station
that makes free air pay

A big Business getter for all garages and service stations. Stands 12 ft. 6 in. over-all; glass-encased revolving head wired for an electric light; long air hose that will reach two cars without moving them. No springs to rust or lose tension. Order today from your jobber or write for full particulars.

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2604 Main Street, Norristown, Penna.

Get This "Pioneer" Garage Special



Electric Drill
and Valve Grinder

Greatest time and money saver,
as well as money maker, for
your shop—

"It Will Do The Work"

Louisville Electric Mfg. Co.
Incorporated Louisville, Ky., U. S. A.
C. E. Willey, Pres. J. B. McFerran, Secy.-Treas.



Re-Babbitted Bearing Exchange

Our Re-babbitted Bearing Department is over two years old. Over 200,000 Con. Rods have been shipped. Less than one to each 2,000 have been returned as faulty. We have over 5,000 **SATISFIED DEALERS** in 16 States. We Re-babbitt ANY Bearing that has ever been Babbitted. Special undersize for Re-ground crankshafts 10 per cent extra.

A few of our **LOW RETAIL PRICES** are:—Marmon and Studebaker \$4.00. Chalmers and Moline Tractor \$3.50. Buick and Maxwell \$3.00. Oakland and Olds \$2.50. Fordson and Dodge \$2.00. Fords 60c each. Liberal Discounts to Dealers and Garages. We pay Transportation one way. **RUSH** Orders shipped same day order received. Satisfaction guaranteed.

Fremont Foundry & Bearing Works
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Angular Contact Radial Bearings
Angular Contact Thrust Bearings
Thrust Ball Bearings
"Star" Ball Retainers

The Bearings Company of America,
Lancaster, Penna.

Western Sales Office,
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Dragon Storage Battery

We Help You
Sell the Dragon

When you take on the Dragon franchise, we go right to work and try to make you the biggest battery man in your town.

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Englert Manufacturing Co.
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ACE HIGH-RATE BATTERY

TESTER shows voltage drop and amperage draw



Inspires Confidence

Shows your customer in a positive way when his battery needs repairs or should be replaced with a new one. In addition to profit it adds to the appearance of your shop and inspires confidence in your ability.

Price \$39.50

F. O. E. CHICAGO

Voltmeter and ammeter, precision type, 4 inch diameter, sapphire jewelled. Variable carbon rheostat —0 to 600 amps.

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WEIDENHOFF 4350 ROOSEVELT ROAD
CHICAGO, ILL., U. S. A.

PAROB EXPANSION HAND REAMER

BLADES CUT AT
DIFFERENT ANGLES

Each successive blade
cuts AT A DIFFER-
ENT ANGLE
from the one
before it.

No CHATTER,
no DIGGING IN—
even in keyed holes.

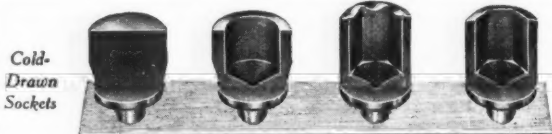
TWICE the expansion of others. All
sizes. Money-back guarantee.

Ask about the **GAMMONS TAPER PIN REAMER**—Wonderful Time-saver.

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Dept. C.

Manchester, Conn.



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ALLEN Wrench Sets

ALLEN PROCESS MAKING A SOCKET

The Allen Manufacturing Company, Hartford, Conn.

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FORD ARMATURES REWOUND \$2.00

MOST ANY TWO UNIT GENERATOR ARMATURE \$5.00

ALL WORK GUARANTEED—WRITE FOR PRICE LIST

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BOWSER

ESTABLISHED 1885

ACCURATE MEASURING PUMPS

S. F. Bowser & Co., Inc. Home Plant, Fort Wayne, Indiana



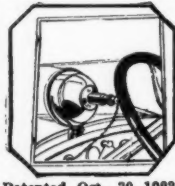
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(2408)

U. S. BALL BEARING MFG. CO., 4551 Palmer St., Chicago, Ill.

All types and sizes of radial (single and double row), thrust, and angular contact bearings, for new or replacement work.



INSHIELD DRIVING LIGHTS


INSIDE THE WINDSHIELD—NO GLASS TO CUT

INSHIELD 8 4 1/2 in. diameter. Heavy Nickel or Black Enamel. Made of heavy sheet brass. 21 c. p. Mazda precision type tipless bulb, silver, triple-plated reflector \$7.50

INSHIELD SENIOR 5 1/2 in. diameter. Nickel finish only. Simplest and best inner-controlled driving light made. \$10.00

The Inshield Products Co., Toledo, Ohio
Formerly the Thal & Bitter Machine Co.

Patented Oct. 30, 1923



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BRAKE LININGS and CLUTCH FACINGS

Always used where safety and service are the first and only consideration.

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Kokomo Long Life tires and tubes make money for dealers who handle them.

Kokomo Twin-Grip Fabrics
Kokomo Two-Grip Cords
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THE QUINCY SILENT AIR-MASTER

The Most Air Per Dollar Cost

WALL PUMP & COMPRESSOR CO.

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COLONIAL CYLINDER HONES

\$17.50 PRICES REDUCED ONE-HALF \$17.50

You can now buy the Colonial Cylinder Hone, an approved tool for this class of work and one of the best Hones on the market at \$17.50 each F. O. B. Kalamazoo. Made in three sizes, one, two and three, No. 1 2 3/4", No. 2 3 1/4" to 3 3/4" bore, No. 3 3 3/4" to 4 1/4".

Colonial Cylinder Hones are now being used by some of the best factory Service Stations in the country as well as by numerous Service Station Owners.


Colonial Gear & Manufacturing Co., Kalamazoo, Mich.



For information about the Durant and Star Car selling franchises write

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560 Jackson Avenue,
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KING QUALITY

ALL THE NAME IMPLIES

STEERING KNUCKLE BOLTS and BUSHINGS
PISTON PINS—PISTON PIN SET SCREWS

Automotive Division
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Noiseless Timing Gears

Install quietness — Cloyes NOISELESS Timing Gears. They give the motor a soft, even "purr"—permanently.

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Sales Representatives
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Beveled Edge with Oil Groove

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2 rings that cover every need

Ground or turned finish
Attractive jobber's proposition

UNIVERSAL MACHINE CO.
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"Hy-Grade" Plain Ring

LINCOLN

FOR ALL CARS—\$15 to \$36

SHOCK ABSORBERS

BATTERY SERVICE EQUIPMENT!

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FOREST ELECTRIC COMPANY

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IT'S EASY TO SELL
"The only oil ring with a mileage guarantee"
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Biflex Cushion Bumper
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SELF-ALIGNING BURNISHING MACHINE
 Makes it possible to fit over-size pistons without removing engine from the car when the variations do not exceed 5/1000 of an inch. Cylinders slightly tapered, out of round, or with shoulders worn by pistons or rings may be made round, straight and true. Price \$25. 12 ounce can Wood-Imes Compound, \$1.50. Write for complete details.
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Be the local Logan Man — Let us show you how easy and how profitable it is to install Logan Ring Gears.

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Profit in Flat Rates

The Hall Cylinder Hone turns out a perfect job, cuts labor cost and keeps your customer's car from being tied up. O. K.'d and recommended by Buick engineers.

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Welco Accelerator
 for Fords

Easily installed—one hole to drill. Works independent of throttle. Any engine speed by setting adjusting nut. In colored carton complete with instructions. Write your Jobber. Also makers of Welco Step Plates, Gas Tank Caps, Blanket Holders, etc.

\$1.50
 Only one hole to drill

The Welker-Hoops Mfg. Co., Middletown, Conn.



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American Bosch Magneto Corp.
 Main Office & Works: Springfield, Mass.
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When you lose a license plate the cost is from \$2.50 to \$5.00. With Giant license plate holders you need not fear losing your license plate as they are fastened permanently to the holders and can be installed in one minute's time. Guaranteed to give perfect satisfaction or money refunded. If your jobber cannot supply you, write us direct.

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DUESENBERG
The Original Straight-Eight
 With Four Wheel **HYDRAULIC** Brakes

INDIANAPOLIS U. S. A.

Six design and style bumpers from which to make selection for all popular make cars

Write for details.

THE BELLEVUE MFG. CO.
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for Motorists
 Utilities—Not EXCESSORIES!

THREE PRODUCTS YOU NEED

ZIP FRICTION PASTE, for fitting in bearings.
 ZIP GRINDING COMPOUND, for valves.
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The Original Write For Samples Ask Your Jobber.
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A reflector, not a lens. Greatest dealer opportunity ever offered. Sold either as complete headlamp or simply as a reflector to be inserted in lamps now in use. Write.

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BONNEY
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BONNEY FORGE & TOOL WORKS, ALLENTOWN, PA.



RELIO
The Van Norman
VALVO

Relio, an electric-drive wet grinder for pistons, pins, valves, bushings, \$475.00.
 Valvo, an electric-drive bench grinder for valves, valve-seat reamers \$175. See page ads this paper.

Van Norman Machine Tool Co.
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**A MONEY MAKER FOR
JOBBER DEALERS DISTRIBUTORS**

When a car owner sees this piece of equipment he wants it—he realizes what a great convenience it will be. This accounts for the record breaking sales now being made.

DUPLEX

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The Spencer Lock Tilting Steering Wheel first adds comfort in the driver's seat—then protects the car from theft. And the insurance it saves pays back the purchase price.

Ask your jobber for details.

Made for Ford, Dodge, Overland, Chevrolet 490 and Superior, Maxwell, Star and Gray Cars.

Should Be On Every Car You Sell

The Spencer Mfg. Co. Spencer Ohio

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Plastic Metallic Packing

Patented

Stops the leaks in automobile water pumps. Mold it with your fingers. Makes a smooth metal bearing—adjustable and practically frictionless. At your Jobber—Get it today. It does the trick. Put up in 1 lb. cans. If your Jobber doesn't carry it, write us direct Price \$1.65 per pound, f. o. b. Conneaut, Ohio.

The Conneaut Packing Company Conneaut, Ohio

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WAYNESBORO, PA. NEW YORK OFFICE: 30 Church St.

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Taps, Dies, Cutters, Drills, Reamers

Send for Catalog

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CLUTCHES, TRANSMISSIONS, CONTROLS, DIFFERENTIALS

A POST CARD WILL BRING YOU FULL DETAILS ABOUT THE WONDERFUL

New AIR CONTROL


M.P.C. Pneumatic Accelerator *for Fords*

MOTOR PRODUCTS CORP. DETROIT, MICHIGAN



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OVER 50 WONDERFUL SHORT CUTS IN NEW CATALOG T-105

ASK FOR IT

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GATES VULCO

Fan Belts and Radiator Hose

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HIGH SPEED HOIST


THE RIGHT MEANS HIGH SPEED PRODUCTION

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But Be Sure It's WRIGHT

WRIGHT MANUFACTURING COMPANY
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The Victor Stop Light for Safety



A never failing rear signal—strongly made and supplied with foolproof automatic switch and heavy cable. Complete and ready to install.

Write for catalog of the Victor line.

THE CINCINNATI VICTOR CO.

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THE PACIFIC RIM TOOL

Handles any size or type of split rim with ease. Operates on the principle of the jackscrew which is the most powerful means of leverage. If unable to purchase from your jobber, write us.

PACIFIC RIM TOOL COMPANY

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One Dealer Sells 125 in One Month

Similar reports about the Optoshield are coming in constantly from all parts of the country. This accessory has taken its place among the most popular sellers in recent years.

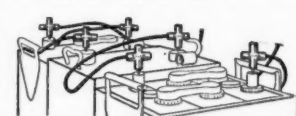
THE OPTOSHIELD

Fits any windshield. Made of sapphire blue scientifically made optical glass. Driver looks through it and is relieved of all eye strain from oncoming head lights, sun glare, snow glare and road glare. Price \$3.50. Territorial distributors, dealers and agents wanted.

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SHURO BATTERY CONNECTORS



A tap with a hammer anchors them into battery terminal—like a nail in a block of wood. Positive metal-to-metal contact. Built to last for years.

BURTON-ROGERS CO.

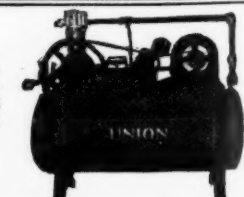
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For Unusual Service

Union Air Compressor, Union for Service, Union for Strength, Union for Reliability. Built by Union Equipment Co., Butler, Pa. The best machine on the market for the money.

Union Equipment Company


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TEST BESTOS

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Front-Wheel Brakes

supplied for ANY MAKE of car. Easily installed. Golden repair opportunity. Write for price list and BIG DISCOUNT.

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More
Power
Less
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Zenith - Detroit Corporation, Detroit, Mich.



SAVES REPAIR BILLS

The recent addition of a special transmission oiling unit makes the FORD FAITHFUL Oiling System a most efficient eliminator of all lubricating troubles. Dealers Write

W. O. Thompson Mfg. Co.
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140 Combinations —all in this ONE set

Everything you need, in one small box, compact, accessible, and a real mechanic's outfit. Sockets will not break. Fully guaranteed. Ask your dealer or write us.

The Eastern Machine Screw Corp.
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"The Best-Equipped Shop
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TAKE THE END-PLAY OUT!

—WITHOUT PULLING THE MOTOR

THE C. A. ADJUSTABLE CENTER BEARING CAP corrects Ford crankshaft end play and sets magnets for highest efficiency without removing the motor. Easily and quickly installed. Guaranteed for one year. List price \$3.75. Ask your jobber or dealer or write us direct.

Pat'd 7-22-'22

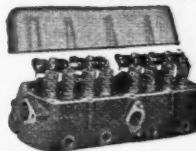
ADJUSTABLE BEARING CO., Inc.
Dept. M. Brazil, Indiana



Thirty-seven
BRANCHES

AHLBERG BEARING COMPANY
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FRONTENAC CYLINDER HEADS and FRONTY-FORDS



The remarkable showing of the Fronty-Ford in the 500-Mile Race at Indianapolis May 30 was due solely to the performance of the Frontenac Cylinder Head. This Head is adapted for use on your Ford car by its designer and builder, Arthur Chevrolet. Write for FREE Catalog. Book, "How to Build a Fronty-Ford," \$2.00; free with orders of \$50.00 or more.

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NO-LEAK-O PISTON RINGS

Won't Leak Because They're Sealed With Oil



No-Leak-O Piston Rings are making money for dealers everywhere. Their "oilSEALing" groove—found only in No-Leak-O—packs an oil film in between piston and cylinder walls like "packing" in a pump. Oil and gas stay where they belong. National advertising is helping the dealer sell No-Leak-O by teaching the motorist the lesson of more mileage on less oil and gas.

It will pay you to stock No-Leak-O at once.

Price 35c and up.

NO-LEAK-O PISTON RING CO., Dept. T-57, Muskegon, Mich.



We Re-Babbitt

Prices on exchange of connecting rods

Buick	\$2.80
Ford	.60
Maxwell	2.80
Oakland	2.00
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Discounts to Authorized Service Stations

INTERSTATE BEARING CO., Herkimer, N. Y.

Connecting rods or Main bearings for any make of Car, Truck or Tractor.

24 HOUR SERVICE

If you have tried INTERSTATE BEARINGS you will not be satisfied with anything less.



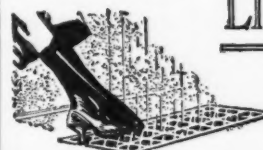
Cyclo "Dynamic" Hot-Spot for Fords

This "Modified Vapor" manifold gives a gas with lots of "kick" in it for hill-climbing — exceptionally smooth running and economical at all seasons. Vacuum control varies the heating inversely with the load.

The best permanent proposition for dealers.

CYCLO MANIFOLD CO.

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LINENDOLL EXHAUST HEATER

Attractive in appearance, with cleaning features of removable heating coil with no connecting joints inside the heater pan to leak. Meets instant approval. No odor or noise. Easily installed and operated. Will boost your winter sales—get our attractive trade proposition.

THE NORWALK AUTO PARTS CO.
Norwalk, Ohio

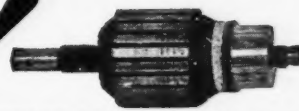
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Here's a new
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Send us your rewind jobs. We are "Armature Winding Specialists."

Profit for you in our service. Ford generator armature rewind—\$1.95. Other prices in proportion. All work guaranteed. Write for catalog and prices on all generators.

H. M. FREDERICKS CO., Lock Haven, Pa., U. S. A.



JACOBS CHUCKS INSURE ACCURATE DRILLING

Write for circular, "A Jacobs Chuck for Every Purpose."

THE JACOBS MANUFACTURING CO.
Hartford, Conn.



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Motor Car

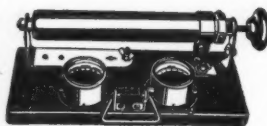


Garage Tools
make well equipped
shops. Ask your
jobber.

Fast and ACCURATE for re-
facing, reseating and grinding
all size valves.

Sioux Flexible Shaft and At-
tachments take the tool to the
work.

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TEST YOUR BATTERIES

by the Chart Method. Something
New. Send for free booklet, today.

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Electric Controlling Apparatus

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\$50
110 VOLT

PETERSEN
Guaranteed HALF INCH
ELECTRIC DRILL

So powerful that the combined strength of three men
could not "stall" it when drilling $\frac{1}{2}$ " holes in steel.
Write for miniature catalog describing the complete
line of Petersen Portable Electric Tools.

A. H. PETERSEN MFG. CO., 1818-24 Frutney, MILWAUKEE

CURTIS

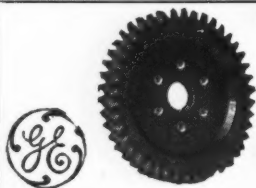
AIR COMPRESSORS-HOISTS-TROLLEYS-CRANES

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C.P. Mfg. Co.

Curtis Pneumatic
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TIMING GEARS

A General Electric product. Made entirely
of cotton fabric processed to wear like iron.
Eliminates all noise from the timing gear
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UNIVERSAL HOSE CLAMP

Adjustable. Two sizes will clamp any hose of
any diameter. Made from cold rolled steel out
of wire. No rough edges to cut hose. Put on
in less than a minute. Everlastingly leak-proof.
Order Universal Hose Clamps. Trademark on
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jobber—or write us.

UNIVERSAL INDUSTRIAL CORP.

Hackensack, N. J.

KISSEL

The Custom Built Car



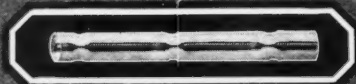
The Aristocrats of
Motordom

7 Models-Open and Closed
Distributors in principal
cities. Open territory now
being closed.

Kissel Motor Car Co.
Hartford, Wis.

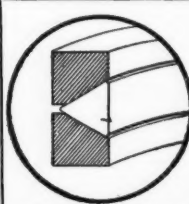
KESTER Acid-Core WIRE SOLDER

"REQUIRES
ONLY
HEAT"



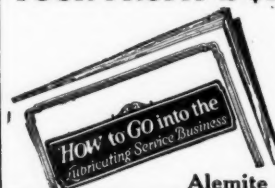
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Wedge-Rite piston rings are 3-piece rings following the
best engineering practice. The patented wedge takes up
the wear, keeping the groove and cylinder wall tight
against oil and compression leakage. Wedge-Rite Piston
Rings are made from the best individual castings.
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Plattsburgh, N. Y.

YOUR PROFIT is \$1.00 to \$3.00 on EVERY CAR



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Tells how to start in this new profitable busi-
ness on an investment as low as \$200. Gives
you facts and figures—brass tacks. Limited
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Manufacturers of

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CARTER OIL GAUGES

For Ford, Chevrolet and Dodge—Only \$3.75
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ACCURATE—EASY TO INSTALL—GUARANTEED

Screw gauge to dash or instrument board; connect copper
tube with elbow in place of lower petcock. No oil passes
thru tube or gauge. No moving parts, floats or plungers.
Easy to sell; easy to install. Big money-makers.

Order from your jobber or write for discounts.

Carter Motor Accessories, Inc., 388 Pearl St., Buffalo, N. Y.

E-Z SPRING



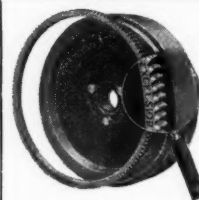
FOR FORD CARS

Makes riding and driving a pleasure. Eliminates road shocks and hard steer-
ing, spring breakage, shock absorbers. Write for our money making dealer
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W. D. LOWE & CO.

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Better than a new flywheel

"Saves Money—Saves Delay"
For every American Car and Truck

**EXCELSIOR STEEL RING
GEARS**

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Cooper

"SPECIAL" Motor Testing
and Carbon Outlet Valve—

COOPER Dash Control

are the Standard of the Industry

Manufactured By THE COOPER MFG. CO., Inc.

Dept. 15-C, Marshalltown, Iowa

Sales Representatives, THE FULTON COMPANY Milwaukee, Wis.

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THE WELEVER PISTON RING CO. Toledo, Ohio
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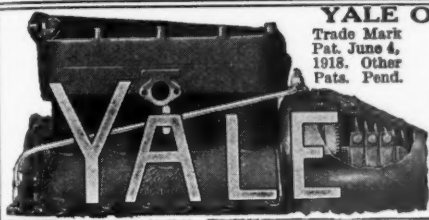
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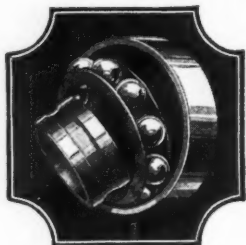
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Salesman with ability to sell your proposition is open for position. Personality and experience. If you desire a go-getter immediately, write. State your proposition. Results guaranteed and references.

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INTERCHANGEABLE
Socket Wrenches

FROM infancy to lusty manhood
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and assures great prosperity for
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**SNAP-ON WRENCH COMPANY,
Mfrs.**

Milwaukee, Wisconsin

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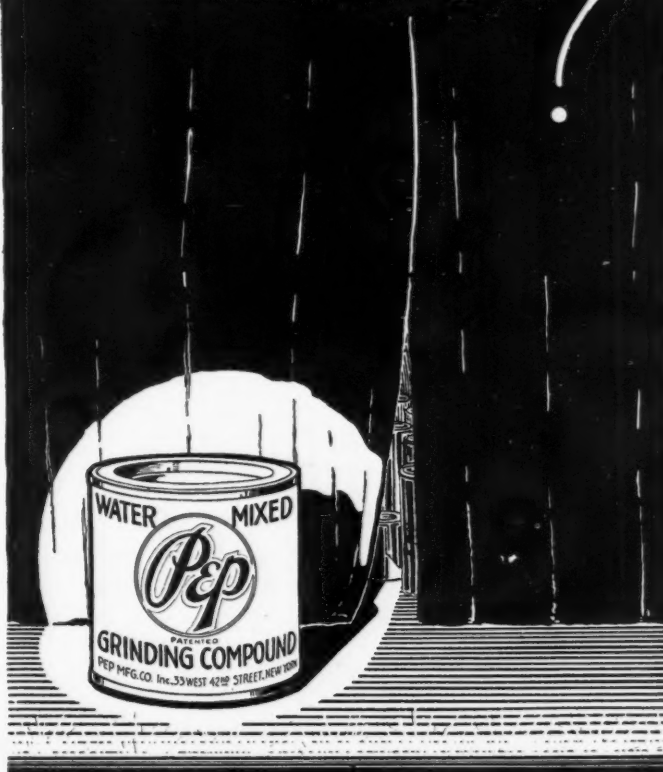
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Our promise — "If you send this coupon NOW for a free sample, you'll never waste another hour nor ring another valve with an out-of-date grease - mixed grinding compound."

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DEALERS: Write for our new free catalog No. 31. It contains bumper recommendations for all cars, and complete description of the Gemco line. Our discounts and dealer sales helps will interest you.

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760 So. Pierce St., Milwaukee, Wis.



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Model AX, 1 3/4-in. steel, Nickel



Para-Mount—
Model B, 2-in. steel, Nickel
Model C, 1 3/4-in. steel, Nickel
Model D, 1 1/2-in. steel, Nickel



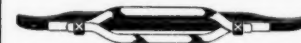
Para-Spring—1 1/2-in. steel, Nickel



Para-Flex—1 1/2-in. steel, Nickel



Little Giant—Full Nickel



Standard Triple-Gard—2-in. Nickel

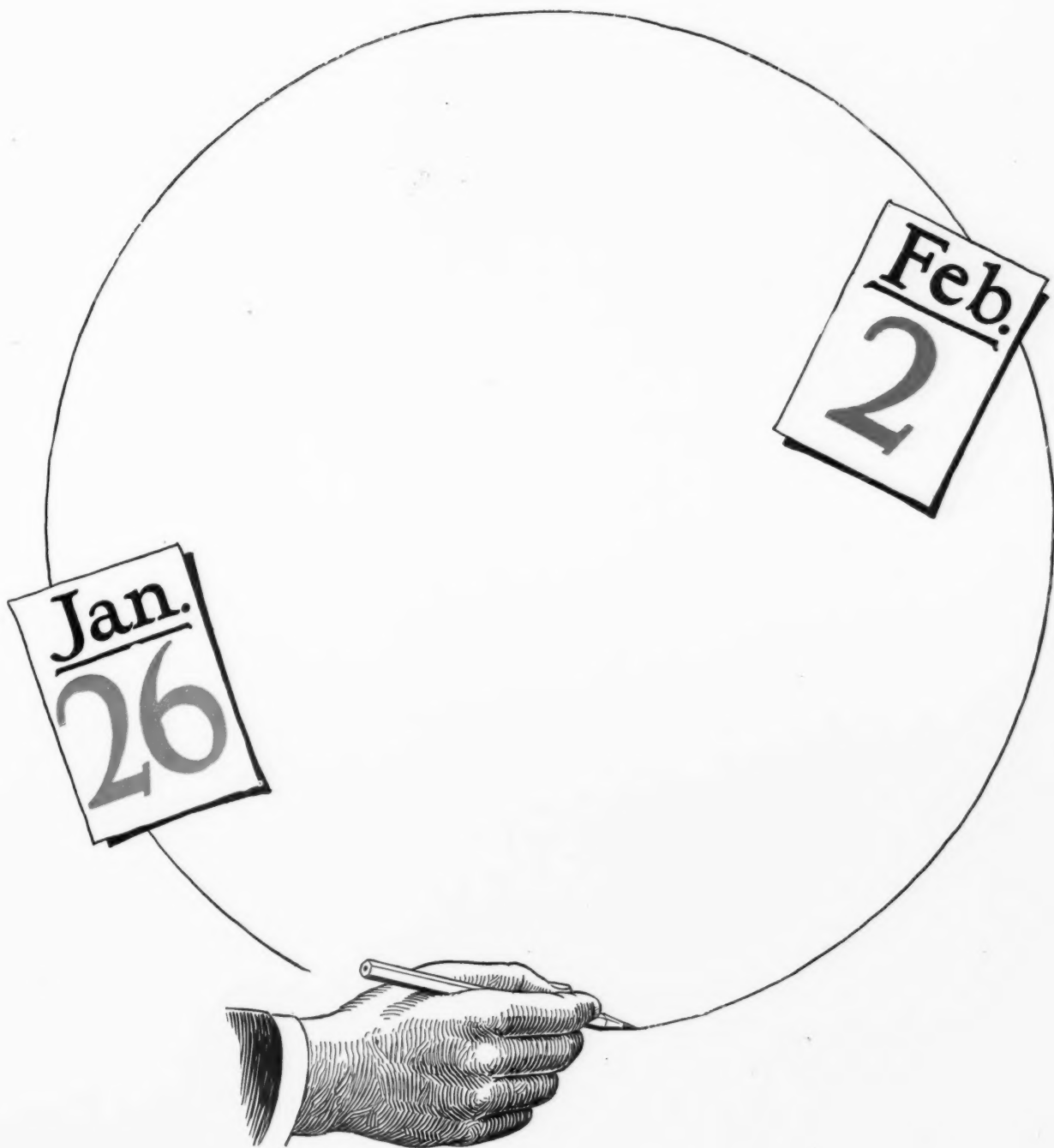


Standard Triple-Gard—1 3/4-in. Nickel



Small Kar—Nickel

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